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Excess Profits Levy and Industry

THE new Excess Profits Levy is in contrast with the incentive to personal effort in the form of income tax reliefs for which the Budget provides. It is disappointing that the Government should have found it necessary even for the duration of an emergency period to impede by taxation and additional costs the contribution that industry could make to the national recovery, and more particularly that in the present difficulty in maintaining industrial capital because of the heavy burden of taxation, that burden should be increased. Reduction in Profits Tax which will afford a little relief in some cases is but slight compensation. The Federation of British Industries has drawn attention to the unfortunate effects of the Excess Profits Levy on industry. It will penalise efforts made to increase exports since the end of the three-year period 1947-48-49, average profits during which are the basis of assessment of the levy, when such efforts result in an increase in profits over the three-year average. The Federation points out that surpluses will be taxed, which represent only increased money values caused by inflation since 1949, and are not reflected in increased physical resources; no mention has been made by the Chancellor of the Exchequer of any corresponding relief for the increased capital required to maintain real capital. The Chancellor will have before long to revise the basis on which profits are computed for tax purposes so as to facilitate such maintenance. Although temporary curtailment of the capital re-equipment of industry may be necessary, it is essential, as the F.B.I. insists, that funds be set aside to meet the capital expenditure which has to be postponed. At present, as we have stressed before, the profits of many concerns, after taxation, suffice only for provision towards meeting rising replacement costs and distributing the same amount of dividend which has lost much of its purchasing power. If it is not practicable to increase profits to the point of arousing political prejudice or increasing inflation, regard should be paid to the incentive to enterprise and industrial development provided by a reasonable return on risk capital.

London Area Fares

CRITICISM of the passenger fare alterations recently made in the London area, and in prospect from May 1 on British Railways in the provinces, has as its main theme that it is an unfair burden on the London compared with the provincial railway traveller. Unfairness in apportioning operating costs is alleged by individuals and bodies of varying political views, including the London County Council and contiguous local authorities, which have suggested that the London passenger suffers most because use of London Transport services is inevitable. Apart from the principle in fare fixing implied by the statutory obligation on the British Transport Commission to pay its way, the apportionment of costs, long considered by the B.T.C. and the Transport Tribunal, takes into account higher costs in and around London, the losses on London Transport road services in 1951, and wartime increases in main-line railway fares; London fares still are likely to be lower than provincial railway fares next summer, and Lord Hurcomb, Chairman of the British Transport Commission, has pointed out in a letter to *The Times* that even if the new fares were operative throughout 1952 net traffic receipts of London Transport rail and road services would still fall short of the proper contribution to interest and amortisation, even without taking the new fuel duty into account.

Transport of Steel

GENEROUS acknowledgment was made last week by Mr. F. Scopes, Chairman of the Transport Committee of the British Iron & Steel Federation, of the outstanding effort of British Railways over the past twelve months in conveying steel. In a letter which was published in several daily newspapers he points out the contrast between the situation a year ago, when there was considerable apprehension in the heavy industries as to the railways' power of recovery to a point where they could meet the demands made on them, and the present encouraging situation. Because of the timely measures taken to deal with traffic during the past winter, aided by relatively mild weather, and of the devotion to duty of many railwaymen throughout the year, the tonnage of steel carried in 1951 was about the same as in 1950 and the iron ore carryings nearly 2,000,000 tons greater; and the tonnage of steel on the ground at steelworks, due to local wagon shortages or operating restrictions, 47,000 tons early in 1951, was negligible at the end of last month. This, states Mr. Scopes, is the best position in which the railways have found themselves since 1945 as far as the steel industry is concerned.

Future of Canals in Britain

THE answer by Lord Leathers, Secretary of State for the Co-ordination of Transport, Fuel & Power, to a question in the House of Lords, on the future of the canal system recorded in our Parliamentary columns this week, is a reminder of the important part played by British canals and navigable rivers. Some 12 million tons a year of commercial traffic are carried, of which half is coal. It is hardly, therefore, surprising, that the British Transport Commission has no intention of abandoning its canal system as a whole. Compared with the 284 million tons of freight conveyed by the railways, 12 millions is not large; but it would be difficult for the railways in present conditions to handle this additional tonnage, most of it

unsuitable, because of its bulk, for conveyance by road. Even after abandonment of navigation on one-third of the canal mileage now operated by the B.T.C., the remaining canals fulfil a useful purpose in moving the traffic for which they are best suited. The Commission took over on nationalisation only some four-fifths of the 2,600 miles of canal in Britain; it is a canal owner rather than an operator, for the craft of the Docks & Inland Waterways Executive move only some 10 per cent. of the total tonnage.

Defence Work in Railway Shops

A WRITTEN reply from the Minister of Transport to a question asked in the House of Commons on March 17 showed that there is no legislative obstacle to utilising the capacity of railway workshops for defence purposes. This possibility was suggested in our March 14 issue as an alternative to staff dismissals during the shortage of steel for rolling stock. The questioner was Major S. F. Markham, who asked the Minister for a statement as to the directions he would give the British Transport Commission to permit railway carriage works to assist in the rearmament drive. He had been informed of the likelihood of steel shortages making dismissals necessary at the Wolverton carriage works of British Railways, but understood that Clause Two of the Transport Act would prevent the works from producing anything not required for the purposes of the British Transport Commission's undertaking. The Minister of Transport's reply, quoted in full elsewhere, showed that the necessary direction for other work to be undertaken could be given under Defence Regulation 55 (2A). Experience in the last war showed the valuable results of wholehearted co-operation by the trade unions in special production tasks, and a similar attitude in the present peacetime emergency would give a lead to the whole country.

Overseas Railway Traffics

A FURTHER two successive improvements in receipts were recorded by the Antofagasta (Chili) & Bolivia Railway in the fortnight ended March 7, bringing the aggregate advance for the current nine weeks up to £556,760, at £1,411,650. During the two weeks ended February 29 and March 7 the increases in traffics amounted to £67,190 at £129,180, and £79,330 at £178,670. Following a $56,983 deterioration to $1,148,425 in December, International of Central America operating revenues rose by $393 to $1,315,737 in the first month of 1952. There was also an increase by $15,932 to $330,061 in net revenue from railway operations for January, but income available for fixed charges fell by $5,732 and net income was $5,310 lower at $175,199. Taltal traffics for February were $797,000 higher at $2,531,000 and aggregate receipts for the 35 weeks to date are now $4,860,000 in advance of those for the equivalent period of 1950-51.

East African Development

AFTER consultations at the Colonial Office on railway and harbour development in East Africa, Sir Philip Mitchell, Chairman of the East Africa High Commission, said before leaving London that the discussions had been satisfactory and there appeared to be a reasonable prospect that the finance and materials needed to carry out the minimum essential works of the East African Railways & Harbours development programme could be obtained. This programme was outlined in an editorial article in our February 29 issue. Sir Philip Mitchell pointed out that, although in the seven years ending December 31 next the total expenditure by the East African Railways & Harbours for capital development, replacements, and purchase of new plant and rolling stock would amount to just under £40,000,000, the agricultural, mining, and industrial production of the territories was expanding at such a rate that substantially greater development expenditure would be required after this year. Sir Reginald Robins, Commissioner for Transport in East Africa, also participated in the discussions, which took special note of the present emergency affecting the whole sterling area.

Planning for Efficiency in London Transport

LORD LATHAM, Chairman of the London Transport Executive, told members of the Institute of Public Administration on Monday how a budgeting system forms an essential element in the control exercised by the Executive over departmental activities. Heads of departments are provided with detailed statistics to show how their operations conform with the forecast as the year progresses, and marked trends or divergencies from the budget are discussed with the Executive Member concerned. Regularity and safety of services are essential to efficiency, and all failures and delays which have lasted five minutes and over on road services, or two minutes and over on trains, are recorded. Abnormal increases in the number of failures are the subject of technical scrutiny, aided, where necessary, by the scientific staff at the central laboratory. Lord Latham described the close collaboration of the scientific service with the engineers in matters of urgent importance at the present time. For example, an increase of 1 per cent. in miles per gallon by buses and coaches can mean a saving of £60,000 on the Executive's annual fuel bill of over £6 million for diesel oil. Another operational research project is directed to studying variations in power consumption by electric trains from year to year and line to line.

Manchester-London Air Service Restoration

FROM April 21 the operation of regular passenger services between Manchester and London by British European Airways will be resumed after a lapse of several years. In the meantime the corporation's Anglo-Scottish routes have attracted increased patronage, and on some flights the "Dakota" aircraft have been replaced by "Pionairs" with a greater passenger capacity. Nevertheless, services on internal routes have continued to be provided at less than two-thirds of the operating cost, as noted in our February 15 issue. A London-Manchester service was operated by Railway Air Services Limited before the war, and in 1946 was resumed, with an extension to Belfast. At this time the aircraft used seated seven or nine passengers. The restored service will be operated by B.E.A. with "Viking" aircraft seating 27 passengers. Railway Air Services Limited itself had planned to use "Vikings" on its internal routes, and was closely associated with Vickers-Armstrongs Limited in the design and details of the interior layout of these aircraft. The new Manchester-London services will fly between Ringway and Northolt airports in 1 hr. 10 min., and will connect at Northolt with services to and from the Continent. By arranging the timings to give Manchester travellers nine hours at the London end, a journey with competitive attractions for business traffic will be provided.

Withdrawal of Blisworth to Stratford Service

A RAILWAY that qualified for the description of "penetrating line" many years before the phrase was as familiar as it is today will, as reported in our March 7 issue, lose its passenger services on April 7. This is the Blisworth to Stratford-on-Avon route of the L.M.R., once the Stratford-on-Avon & Midland Junction Railway. In recent years the Blisworth to Stratford service has been known popularly as the "Overland Limited," and its trains enjoyed much patronage during the war when evacuees at the friendly-sounding villages served by the line made their weekly trip to Northampton cinemas. From Byfield to Stratford the line was used for a time by through Great Central Railway trains from Marylebone *via* the South Curve at Woodford & Hinton, and for much longer through coaches for Stratford were detached from G.C. trains at Woodford Station. This was as far as the Great Central got towards achieving Sir Edward Watkin's ambition of a through service from Marylebone to Worcester and beyond *via* Broom Junction. As the scene of a Ro-Railer service operated for a time by the L.M.S.R. between Blisworth and the Welcombe Hotel at Stratford, the line has a history unusually rich in interesting experiments considering its rustic setting for most of the route.

First British-Built Bo-Bo-Bo Locomotives

THE long association of the English Electric Co. Ltd. with motive power for the New Zealand Government Railways enters a new phase with the articulated Bo-Bo-Bo locomotives described on other pages this week. This design, produced in collaboration with Robert Stephenson & Hawthorns Limited, the builder of the mechanical parts, is the first from British manufacturers to embody this particular wheel arrangement and form of articulation. The two half-superstructures of each locomotive are controlled by side bearers on the centre bogie, the outer bogies being free to accommodate themselves to track irregularities without influencing the weight distribution at the rails. These mechanical characteristics combine with the electrical design to form a locomotive well adapted to mixed-traffic duties on the Wellington to Paekakariki and Upper Hutt route, with its steep gradients and severe curves. Nine running notches are provided, two weak-field settings being available in any of the three motor groupings. A liberal time-rating of the resistances in the series connection will facilitate operation on duties involving shunting *en route*.

Railway Progress Since Nationalisation

AT a time when recent increases in passenger fares and freight rates have renewed criticism of the railways, it is right that a reminder should be given of the reasons for those increases and of the services provided in difficult postwar conditions by British Railways, at charges which are not excessive in the light of the rise in the cost of other commodities. This reminder was given, and some useful facts stated, by Mr. John Elliot, Chairman of the Railway Executive, in his address last week to the Rotary Club of London, summarised elsewhere in this issue. When freight rates have risen on an average by 120 per cent. since 1939, and passenger fares by some 70 per cent., the increases quoted by Mr. Elliot in the cost of what the railways have to buy are in startling contrast: coal, for example, costs three times as much as in 1939 and timber sleepers six-and-a-half times; and scarcely one of the hundreds of materials that the railways buy in bulk has not much more than doubled in price since before the war. The railway wage bill now is over two-and-one-third times the prewar bill, and has risen sharply in the past year. Yet the British Transport Commission is hampered in its efforts to fulfil its statutory obligation to make its activities, of which British Railways are by far the greatest part, pay their way. Despite the progress made since nationalisation in closing obsolete branch lines, the railways still have the burden of maintaining and working lines which cannot now hope to pay. Much more serious is the slow working of the machinery for authorising increases in railway rates and fares. The railways, as Mr. Elliot points out, "have to pay on the nail like any other business, but our prices to the public lag far behind while we argue our case before the Tribunal." Nevertheless, British Railways have not so far failed to cover their working expenses, even although enough has not been earned to meet their full proportion of B.T.C. fixed charges.

The critics who object to the increase in railway charges on the ground that such increases should be obviated by economies, should consider what has been achieved already. The record traffic figures given by Mr. Elliot are the more remarkable in view of the smaller numbers of locomotives and rolling stock used. Further progress has been made in rationalisation of plant and stores, including standardisation and measures to make the best use of the works taken over at nationalisation. Besides the staff shortage, largely mitigated by voluntary work by operating staffs to clear essential freight traffic during the past winter, all staffs have been cut to the minimum, and there is no substance in criticisms of top-heavy headquarter staffs.

The future is overcast by the reduced allocation of steel, and the restriction on capital investment, to both of which we have alluded in this journal. The seriousness of the former is shown by the probable cuts of 35 per cent. in freight vehicle and of 50 per cent. in locomotive construction to which Mr. Elliot refers; and it seems unlikely that any passenger coaches of the 1952 programme will be built, though it should be possible to complete work carried over with existing stocks of steel. Track renewal is more a question of staff than of steel. The restriction on capital investment is delaying projects such as the Tilbury line electrification, dieselisation of shunting power, completion of the Southern Region electrification schemes, and widening of the Eastern Region main line between New Barnet and Potters Bar—to name four of many. The magnitude and variety of the works postponed show how active British Railways would be, if they had the opportunity, in improving their plant over and above what they have already done in four years.

Colonial Railways Standards Conference

A COLONIAL Railway Standards Conference is to be held in London under the auspices of the Colonial Office and the Crown Agents for the Colonies on March 31, and daily until April 9, under the Chairmanship of Mr. R. W. Foxlee, Engineer-in-Chief, Crown Agents for the Colonies. The Chief Mechanical Engineers of the railways of East Africa, Nigeria, Gold Coast, Malaya, Sierra Leone, South Africa and Rhodesia will attend, as well as representatives from the Sudan and Nyasaland Railways. This follows the first Conference held in London in March, 1950, reference to which was made in our March 17, 1950, issue. The objective of the Conference is to give consideration to the basic design of various types of wagons suitable for operating on the majority of the railways concerned, and also to a proposed medium-weight steam locomotive and to the standardisation of diesel locomotives.

For a considerable time it has been realised that there is wide scope for a greater degree of standardisation of railway equipment supplied to many of the Colonial territories. This was specially so in the years immediately following the war, when considerable difficulty was experienced in fulfilling the demands of the railways. In many cases standardisation of equipment would lead to greater economy in production and consequent lower costs. Mr. H. A. R. Binney, Director, British Standards Institution; Mr. W. Cyril Williams, representing the Locomotive Manufacturer's Association of Great Britain; and Mr. H. Green, and Mr. H. H. Holloway, representing the Railway Carriage & Wagon Builder's Association, will also attend the conference.

Modernisation of the Swedish Railways

DESPITE the worldwide restrictions on capital investment, the Swedish State Railways hope to go ahead with an important investment programme for 1952-53. In our Swedish contemporary *Teknisk Tidskrift*, Mr. Erik Upmark, the General Manager of the Swedish State Railways, states the general problem of capital investments for railways in present conditions, and gives details of the current programme of his undertaking.

The post-war programmes of the Swedish railways were partly influenced by the drop in traffic just after the war when road traffic recovered its position after wartime restrictions. The need for stricter economy called for a rationalisation policy which in turn required new capital investments. Although the Swedish State Railways have not always been able to make full use of the investment powers conferred on them, there is now a strong case for a more determined pursuit of a well-planned investment policy.

During 1951, goods traffic on the Swedish railways reached and maintained a new high level, in spite of heavy road competition. This traffic is being carried by an inadequate number of largely over-age wagons. Passenger traffic, on the other hand, has gone down, particularly since a fares increase last May. To counteract this decline, it is considered necessary to pursue still more energetically, the already successful policy of introducing light vehicles

of the railbus type. The existing steam locomotives are all over-age; for that reason alone further electrification or dieselisation cannot be long delayed. It is also necessary to continue the doubling of some of the most important main lines.

Altogether, the railways seek powers to invest in 1952/53 nearly Kr. 300,000,000, including about Kr. 120,000,000 for fixed installations (permanent way, signalling, electrification, and buildings) and approximately the same amount for rolling stock.

Among the fixed installations covered by this programme are improvements at Stockholm Central Station in connection with the building of the municipal underground railway; extension of carriage sidings at Hagalund; replacement of the Tomteboda workshops by a modern establishment at Hagalund; modernisation of the marshalling yard at Ange, where railbrakes are to be installed; the completion of some 25 miles of double-tracking on the Stockholm-Gothenburg and Katrineholm-Malmö lines; the electrification of the Söderhamm-Sundsvall-Härnösand-Langsele, Ludvika-Tillberga-Sala, and the Hässleholm-Kristianstad lines.

The rolling stock programme includes some thirty narrow-gauge diesel locomotives and a number of standard-gauge diesel shunting locomotives in addition to 25 already on order in Germany. There is also an acute shortage of electric locomotives which it is proposed to overcome within the next five years. Railbus operation has been so successful that the Swedish State Railways propose to acquire 125 of these vehicles a year over the next five years.

New construction of ordinary coaches is to be confined to a small number of second class sleeping cars to replace old vehicles. There is a pronounced shortage of goods wagons; of about 38,000 standard-gauge wagons owned, some 13,000 are more than forty years old, including 3,500 which can be maintained only at high cost. To meet all the requirements, more than 20,000 wagons should be built during the next ten years. For economy reasons the programme has been cut to 1,500 new wagons during the coming year, and 1,200 wagons a year during the following five years. Already, a number of wagons is on order from Germany. In addition, wagons for special traffic, such as perishables and iron ore, will be ordered.

Rhodesia Railways

THE report of the year ended March 31, 1951, of the Rhodesia Railways, received from the General Manager, Sir Arthur Griffin, shows that many records were achieved. Amongst these were the total revenue, nearly 20 per cent. over the previous year and 94 per cent. over the year to September, 1946; coaching revenue; total goods tonnage; revenue and tonnages from coal and coke; results from export copper; and revenue from road motor services. These records, it is pointed out, do not reveal the many difficulties overcome. In its rapid growth the railway has suffered from shortage of European and African labour, aggravated by a high rate of wastage among the staff, and from lack of constructional capacity. The housing shortage contributed to the staff problem, especially among artisans, but progress was made during the year in housing both Europeans and Africans. Labour control and time and motion studies were extended, and the report mentions the forthcoming establishment of a branch in charge of this work. At the end of the period under review, it is stated, there was difficulty in making the best use of existing resources for handling traffic, because of the time-lag in deliveries of new equipment and the completion of new major works.

The burden of repayment on capital is described by Sir Arthur Griffin as a serious feature. It was necessary to meet the interest and sinking fund on the initial loan from the Southern Rhodesia Government, and there were considerable obligations in respect of other sources of capital funds and the necessity of paying subventions to the separate Governments by appropriation from net revenue. The matter was the subject of a memorandum which made certain recommendations to the Railway Board.

The following are some of the principal results:—

	1949-50	1950-51
Mileage open	2,346	2,435
Gross ton-miles (thousands)	4,984,198	5,701,245
Net ton-miles (thousands)	2,265,021	2,591,770
Average haul (miles)	421	415
Train-miles	7,818,934	8,757,606
Engine-miles	9,249,465	10,421,099
Tonnage conveyed :—		
General merchandise	2,276,807	2,724,492
Coal & coke	1,903,713	2,167,165
Minerals	1,197,246	1,351,448
Total tonnage conveyed	5,377,661	6,242,733
Total passenger journeys	2,374,222	2,420,800
Receipts :—	£	£
General merchandise	5,641,047	6,924,061
Coal & coke	1,032,035	1,160,249
Minerals	1,655,066	2,086,781
Livestock	112,222	126,236
Coaching	1,324,909	1,403,916
Road motor services	255,144	308,169
Total revenue	10,265,782	12,308,176
Total expenditure	8,701,349	10,154,480

The rise in receipts being caused largely by development of operating resources in the way of new locomotives and rolling stock, the full impact of maintenance and repairs, it is pointed out, had still to be felt. The increasing proportion of coal traffic was considered likely to have an adverse effect on revenue. The tendency in recent years to increase in the operating ratio—though it was 76·3 per cent., against 79·4 per cent. for the previous year—made a revision of the rates structure desirable, and during the year a start was made with many minor alterations in the rates classification, partly in providing for commodities previously unclassified and partly in increasing some very low rates.

The insufficiency of existing telecommunications is mentioned, and the desirability of acquiring more telecommunication routes from the Southern Rhodesia Government. Planning of traffic movements was continued; allusion is made to the accuracy of previous forecasts of ability to deal with traffic offering. Collaboration in a working party appointed by the Southern Rhodesia Government on future traffic developments revealed that very heavy demands would come on the railway for carriage of coal to thermal power stations in the country. Even although an early beginning were made with the Kariba hydro-electric scheme, it would be some years before such power would be available and meanwhile, so that development should not be retarded, extensions of existing thermal power stations would be necessary unless some alternative were provided. These extensions would involve over some years a steadily increasing coal movement—a burden which could only be sustained by considerable expenditure on works, lines, and plant, and some of which might temporarily become redundant once hydro-electric power became available. Sir Arthur Griffin suggested to the Government that, instead of extending thermal power stations or providing new ones, scattered over the country, a new one should be sited on a suitable coalfield. This proposal was supported by the Railway Board.

The Rhodesia Railways also were closely associated with railway planning committees set up by the Governments of Northern and Southern Rhodesia. Much time and study have been devoted to the further expansion of the system and in particular to the economic effects and railway implications involved in the construction of an additional outlet to the sea and of a link to Northern Rhodesia. The two major projects dealt with were a direct line to Lourenço Marques, and the Sinoia cut-off connecting the railway in the neighbourhood of Salisbury to the Northern system near Kafue or Lusaka. The former was suggested early in 1948 to ease the position as to imports and exports to and from the two Rhodesias; and the latter is a project of which a survey was made as far back as 1932 and is designed mainly to provide a more direct route from the Copperbelt area to Beira. (Authority has since been given for construction of a direct line to Lourenço Marques.)

Despite many difficulties, including shortages of engine water and shunting power, and congestion at the port of Beira, the operating results were on the whole satisfactory; the total tonnage conveyed was 16 per cent. and the total number of passengers nearly 2 per cent. up on the preceding year. Traffic of all kinds by the road motor services showed increases over 1949-50; these were 21 per cent. for goods tonnage and 33 per cent. for African passengers. Civil

engineer developments included completion of the Cape Main Line deviation in connection with the Bulawayo development scheme; survey of the Dett-Wankie deviation; completion of the Hunyani Bridge sub-structure; planning the remodelling of Gwelo, Livingstone, Broken Hill, Umtali, and other yards; and construction of new crossing loops. Relaying in Northern Rhodesia and elsewhere was delayed by shortage of African labour.

Twenty-seven 15th class Beyer-Garratt locomotives were put into service, which completed the order for 60. Twenty-three third class coaches were placed in service; these were built by the Metropolitan-Cammell Carriage & Wagon Co. Ltd., and described in *The Railway Gazette* of March 23, 1951. New goods stock comprised 355 vehicles, including steel wagons, cattle, and petrol and acid tank wagons. The high standard of locomotive repairs, the report states, was hardly maintained during the year because of the rate of turnover in staff.

The outstanding material was delivered for installation of centralised traffic control between Heany Junction and Shangani, referred to in our issue of June 29, 1951. Work was expedited, and by the end of March, 1951,, all stations and sidings between Heany and Trevello were completed for testing.

International Traffic *via* Holland

INTERNATIONAL freight traffic in 1950 contributed 30 per cent. of the total tonnage hauled on the Netherlands Railways, but geographical circumstances make the system vulnerable to competition from inland waterways and coastal shipping. The efforts made by the administration to retain and increase its traffic of this kind, in passengers as well as freight, were described by Dr. D. J. Wansink, General Manager of the Netherlands Railways, in a lecture to the Railway Students' Association, London School of Economics and Political Science, on March 12. Dr. Wansink said that there had been a tendency in recent years for passenger traffic between Holland and other European countries to go increasingly by air or road. His suggestion for checking this trend is a radical alteration of existing train services, increasing their number and their speed. He suggests shorter international trains, with a saving of the time occupied at present in coupling and uncoupling through portions. In Dr. Wansink's view it would be necessary to abandon steam traction and change over to electric or diesel locomotives in order to implement his proposals. He attaches much importance, also, to a service of night trains as a means of countering the attractions of air transport for the business traveller.

Transit passenger travel *via* the Netherlands depends on the traffic between England, Germany, and Scandinavia *via* the Hook of Holland. Dr. Wansink described the policy of attracting patronage to this route by quicker journeys, the effect of which will be seen this summer with the introduction of the " Rhine Arrow " between Hook of Holland and Basle (with connections to Munich) and the " North-West Express " between the Hook and Scandinavia. The journey time to Basle will be reduced by 2 hr. 16 min. (10 per cent.) and to Innsbruck by 10 hr. 15 min. (30 per cent.). By the " North-West Express " the acceleration to Copenhagen will be 5 hr. 28 min. (17 per cent.), and to Stockholm, and Oslo 9 hr. 50 min. (21 per cent.). By means of these accelerations the Hook of Holland route will offer a shorter journey than by the " Nord Express " *via* Dover-Ostend, giving a time of 26 hr. 44 min. from Copenhagen to London by the " North-West Express " compared with the " Nord Express " timing of 30 hr. 48 min.

Much of Dr. Wansink's paper dealt with freight traffic and the measures taken to secure a share for the railways in the face of competition from other carriers. Fifteen district commercial agencies within Holland are in constant touch with importers, exporters and forwarding agencies, while Netherlands Railways representatives in Dusseldorf, Frankfort, Basle, Paris, and Brussels follow up inquiries from traders with the special object of enabling joint efforts to be made with the foreign railway concerned to influence the traffic to rail. With regard to Netherlands-England traffic, and transit traffic to and from England *via* the Netherlands, Dr. Wansink suggested the possibility of an additional ferry route, namely, one between Harwich and Rotterdam, giving a direct connection with the Midlands. He foresees loss of freight traffic, which at present has to be transhipped at the ports, to the forthcoming road vehicle ferry between Tilbury and Rotterdam, and considers the problem of providing a train ferry service to be one requiring careful consideration if this competition is to be effectively offset.

Firebox Repair by Oxy-Acetylene Welding

REPAIRS to locomotive boiler copper fireboxes by the oxy-acetylene process have become established practice not only on the railways in this country but also on overseas railways, although possibly not to the same extent. The slower development overseas of this method of repair is not due to any doubts arising as to its efficiency or economy, but to the difficulty of training the necessary skilled staff, and it is considered that, as a long-term policy, any expenditure incurred to provide the necessary training facilities would be amply repaid by the monetary savings which would undoubtedly accrue. The older method of repair by patching resulted in many cases in a much more expensive repair being necessary after the boiler had been in service, especially so where the patch was in the fire zone, due to the cutting action of the flame, which has a tendency to reduce the parent metal at the edges of the patch.

In a paper delivered before the Institution of Locomotive Engineers on Wednesday last, Mr. J. F. Harrison, Member of Council of the Institution, and Mechanical & Electrical Engineer, Eastern and North Eastern Regions, referred to the developments which had taken place at Gorton, where the cost of firebox repairs was exceptionally heavy due to the very bad water conditions on the former Great Central Section. Mr. Harrison said that it was not until 1927 that the repair and manufacture of new copper fireboxes by the oxy-acetylene welding process had become an established practice.

The first of the objectives at Gorton during the development stages was to ensure that welds would have a tensile strength equal to that of the parent metal, and bend successfully through 180 deg. when hot. To reach this standard occupied some six months of experimental work. After the experimental stage, welding repairs were carried out, building up wasted radii in tubeplates and doorplate flanges, and the welding of two new lower half wrapper plates, the latter giving 4½ years of satisfactory service. From 1945 a considerable number of half or three-quarter sides were fitted and repaired by welding.

Experiments were further extended by the insertion by welding of new plate in and around firehole mouthpieces, and the insertion of pieces in tubeplate and doorplate flanges. Patches let into the lower half of the wrapper sides were developed where it was considered to be more economical than the fitting of a complete new half plate, and the reinforcing of the radius of firehole flanges of the solid ring type doorplate. The most recent developments are the sealing of copper stays in the lower portion of the wrappers. The total number of fireboxes repaired by welding up to the end of 1950 was 700; of these some 17 were considered failures; the term is applied to repairs to fireboxes that did not run the complete period between general repairs, or when a weld leaked while in service.

Research has also been directed to the problem of leaky rigid stays, as a result of which ten fireboxes have had the stays in the fire zone seal welded. Some of these boilers have been in service up to two years, and results indicate that the experiment is proceeding satisfactorily. There are considerable potential savings in this method of sealing rigid stays, since the stay head inside the firebox is continuously reduced by flame action. If satisfactory results can be obtained it will obviate the necessity for the motive power depot staff to re-rivet leaky stays, with consequent saving in time and labour.

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

World Railway Speeds

February 29

SIR,—The information in your February 29 issue reveals what one would expect—that the country with the most sparse population provides the most spectacular figures.

Population density in the United States is 45 per sq. mile, about one-twelfth of that of Great Britain whose corresponding figure is 530. In France, the second country you mention, the density is only 190 per sq. mile. Belgium, with a figure of 710, is not even mentioned. The inference is obvious.

Many long-distance fast trains are an essential part of the economy of an industrialised country with great open spaces. Performance statistics of trains really have no significance unless seen in the light of this elementary fact.

Yours faithfully,

WILL LYNCH

32, Pield Heath Avenue, Hillingdon

Services to Stratford-on-Avon

March 8

SIR,—The impending withdrawal of passenger services between Blisworth and Stratford-on-Avon does not come as a surprise, but it is surprising that a running junction has not been provided at Fenny Compton, and a Banbury-Stratford-on-Avon service tried. Through coaches between Paddington and Stratford were recently withdrawn because of engineering works. It might have been possible to continue them *via* Banbury.

Significant figures are: Paddington to Stratford *via* Bicester and Leamington, 102¾ miles; *via* Bicester and Fenny Compton, 92 miles. Time, Paddington to Banbury 82 min., Banbury to Fenny Compton 15 min., Fenny Compton to Stratford 29 min.; total, 126 min. by existing trains. Time, Paddington to Stratford *via* Leamington on the "William Shakespeare," 138 min.

The public would gain by the operation of both routes, and an increased number of passengers should offset the financial loss to the Executive of a reduction in mileage. A useful alternative route between Banbury and the Birmingham area would also be opened up.

Yours faithfully,

R. G. R. CALVERT

10, Botton Avenue, Windsor

Royal Funeral Train Locomotive

March 8

SIR,—Further to the correspondence on the locomotive used on the Royal Funeral Train, I can only assume that Mr. P. J. Lynch has adopted his argument through completely missing the point of my previous letter, or, in this instance, has a mistaken standard of values on which he judges the action in question.

The point on which I feel so strongly is not that the plates were merely changed within a class, but that they were changed at all. Every interested person who from now onwards views the former No. 7013 bearing the plate stating that King George V drove the genuine No. 4082 will naturally believe that he is looking at the actual locomotive, though the machine now bearing the plate was not built until over 20 years later.

I appreciate the opening remarks of Mr. A. F. Cook's letter and heartily concur, but the sense is destroyed by his observation that the permanency of the transfer is a saving grace; in my opinion, the opposite is true. If British Railways had openly announced that as genuine No. 4082 was not available temporarily, the plates would be loaned to No. 7013, great objection could not have been taken, even though my original remarks about unpreparedness would still stand. Making the transfer a permanency will merely perpetuate a falsehood.

With reference to Mr. Cook's last paragraph, it is accepted that "the metamorphosis which a modern locomotive undergoes during repair" will not break the continuity of the history of the particular locomotive. In this instance far more is involved in that the detailed differences between Nos. 4082 and 7013 are mainly of design and not of renewal, which does in effect completely break the historical link with the original.

Yours faithfully,

A. C. SMITH

25, Talbot Road, Bristol, 4

Speedy Repair Work

March 7

SIR,—I should like to pay tribute to the engineering staff of the North Eastern Region for the speedy and efficient manner in which it reopened the York to Hull line after it had been blocked by the recent accident at Full Sutton, when an aircraft crashed on top of a goods train, derailing 21 wagons and tearing up the permanent way for about 90 yd.

The accident did not occur until 5.5 p.m., yet by 7.45 a.m. the next morning single-line traffic had been restored, and complete normal working was effected by 3 p.m., all notwithstanding foggy conditions which must have hampered repair operations considerably.

It must be gratifying to the public to know that the much maligned British Railways can still rise to the occasion, and I derive special satisfaction because of my close association with some of the staff concerned.

Yours faithfully,

J. C. PARRY-JONES

55, Queen Street, Maidenhead

The Ford Accident

March 5

SIR,—I have read with interest the summary in your February 29 issue of the report by the Inspecting Officer of the Ministry of Transport on the accident at Ford, and I should like to raise one or two points.

The evidence shows that the outer home signal was pulled off to allow the train which caused the accident, after its having been duly checked, to draw up to the inner home which was "on." As a result of the motorman's not obeying the inner home, his train ran into the rear of another standing in the relief road, the points being still set for that road and not capable of being restored to "normal" for the through road because the stationary train had not cleared the track circuit.

These facts are clear and indisputable. The diagram which you publish shows—and this is important—that the inner home is 144 yd. in rear of the point of impact, and that the outer home is 501 yd. to the rear of the inner home.

As the Inspecting Officer makes no comment on the pulling off of the outer home, one assumes that the practice of so doing has been authorised, and one would like to pose the following questions as a matter of public interest:—

(*a*) If this is not "two in a section," what is it?

(*b*) If the practice has indeed been sanctioned, what is the reason that the customary 440 yd. minimum between trains in such circumstances is not required to be maintained, and what in such situations are outer home signals for? Certainly not to check the train only.

(*c*) In view of the disastrous results in this case, has the Minister of Transport, since the accident, altered the practice at Ford (and at any similar places), or does he propose to allow it to continue?

I suggest that in all cases where outer homes are provided—clearly to allow of the procedure known to signalman as

" both roads acceptance "—the usual practice of holding one train at least 440 yd. apart from another be rigidly adhered to.

One knows all about such special working, as, for example, between London Bridge and Cannon Street and Charing Cross, and the allowing of shorter gaps between trains where there are track circuits and four-aspect colour lights, but this case is an ordinary one with semaphores plus the existence of the human element both on the footplate and in the box.

Yours faithfully,
BERNARD DE NEVERS

14, Berners Street, London, W.1

[Bringing a train up from an outer to an inner home does not give two trains in a block telegraph section or station signalling section. The distance of 440 yd. is the overlap prescribed at block acceptance signals, and outer homes are provided at junctions to enable trains to be accepted simultaneously from the block post in rear while affording an ample overrun to meet any reasonable contingency. No such overlap is laid down, nor is one necessary, where a train has been stopped in accordance with Rule 39a and the signal then cleared for it to come forward to the one in advance, as such a train can be assumed to be under control and no appreciable overlap to be called for. The distance of 144 yd. beyond the inner home at Ford was far beyond anything required to guard against any slight error of judgment in stopping again under the circumstances. No rule was violated by the signalman, who was endeavouring to avoid further delay to the train. It is almost impossible to frame rules or make arrangements which will be invariably effective should signals be totally ignored.—ED., *R.G.*]

Traffic Apprentice Schemes

March 8

SIR,—I have followed the recent correspondence on this subject with considerable interest but it would be fair to say, I think, that none but the naive or disgruntled would seriously object to the present method of selection. There may be better—and more expensive—methods but the present-day successful candidate is subject to such rigorous selection at three stages that he can hardly avoid being above average. But that does not mean that all " above average " men are traffic apprentices.

It is the general practice in industry to select future managers from the younger members of the staff, but nowadays it seems that, for a number of reasons, the railways are not getting their share of the talented youngsters who leave school each year. Therefore I think it would be an honest prophecy to suggest that if the standard of recruits to the service remains at the present level the standard of traffic apprentices appointed may eventually become lower than many of those who were rejected by the old regime, if it has not already done so.

I should like to see a raising of the age limit to permit continuous selection from the whole staff so that until it works itself out the persons selected would continue to represent the pick of the staff, year after year. After all, a man in his early thirties, at present disqualified, can look forward to nearly as many years in the service as he is years old, and I am convinced that in the long run the Executive would benefit by tapping a larger source of potential trainees.

At the first examination under this system there would probably be a large number of candidates to examine in writing, but it should surely be possible to devise a method of high marking whereby candidates were classified as " pass," " possible," or " fail." The first category—say 80 per cent. of possible marks—would be interviewed, the second (65 per cent.) would be permitted to sit again. Failures would be disqualified from further examinations.

Yours faithfully,
ROY VINCENT

83, Marlands Road, Ilford

Railway Carriage Design

February 16

SIR,—In your February 15 issue, Mr. G. Richard Parkes suggests that " something far more comfortable and convenient than any seating arrangements available in third class on British Railways " should be designed. May I draw Mr. Parkes's attention to the correspondence which dealt with the same question in your issues between April and December, 1950.

In a letter on coach design, published in your December 22, 1950, issue, he may find the opinion that " For long-distance rail traffic it will not do to try as before to pack people into rows of seats either in compartments or in open saloons which hardly ever are fully occupied. Instead, by making full use of the possibility of offering 'space' which no road vehicle can afford, the coach should be divided into rooms with perhaps a little less seating capacity but highly increased comfort by providing 'leg space' in divisions for, say, four, eight, twelve people to choose from . . ." Simple armchairs are then suggested instead of benches.

How far such ideas will have to be modified again when railways become mass conveyor belts, as visualised by the German Reichsbahndirektor Professor Bäseler, remains to be seen.

Yours faithfully,
W. JACOBSOHN

76, Elgin Crescent, London, W.11

Publications Received

Eisenbahn-Sicherungsanlagen; Band 2: *Mechanische Sicherungsanlagen; Signale und ihre Fernberienung.* (Railway Signalling Installations; Vol. 2; Mechanical Signals and their Operating Mechanism.) By Arnold Buddenberg. Berlin: Fachverlag Schiele und Schön. 320 pages, 8¼ in. × 5¼ in. with 329 illustrations, bibliography, and index.—This is the second of a series of books intended to cover the whole field of German railway signalling written by one of the foremost authorities. The present volume covers the details of all types of running signals, indicators, and other forms of associated devices used on the main lines today, every part of the mechanisms and fittings being fully described and illustrated. The double-wire transmissions and their attachments, always used in Germany, are similarly treated, and the whole forms an exhaustive account of this interesting aspect of signal engineering, much of it so unlike the apparatus employed in Britain under single-wire operation. Anyone wishing to familiarise himself with the double-wire system should not fail to read this work and the preceding volume covering the operation of points.

English Electric Activities in 1951-52.—An illustrated brochure has been produced by the English Electric Co. Ltd. to show the whole range of activities of the English Electric group of companies during the past year. Among the examples of traction equipment shown are the 600 h.p. diesel-electric locomotives for the New Zealand Government Railways and the first main line diesel-electric locomotive for Australia, which is powered by an English Electric 1,600 h.p. diesel engine, generator and traction equipment. Fixed installations for railway electrification are represented by one of the company's pumpless steel tank rectifiers, orders for which have been placed recently by the Southern Region in connection with the scheme for converting supplies on the Region's suburban system from the 25-cycle to the 50-cycle frequency.

Rolling Stock Electrical Equipment.—J. Stone & Co. (Deptford) Ltd. has published an illustrated loose-leaf folder, No. X1027, giving the principal design and other relevant features of rolling stock electrical equipment. The equipment dealt with includes the application and technical description of the Stone-Carrier air-conditioning system, fluorescent train lighting, compressed-air and electrically operated water-raising equipment and the Smith-Stone railway speedometer. Dimensioned drawings of the various fittings, together with wiring diagrams, are included.

XUM

THE SCRAP HEAP

Much Binding

A " Logical Grumbling " contest was included among the events at this year's Western Region Music & Drama Festival at Reading. Eleven competitors entered to air their grievances.

Bejewelled Tunnel

A " jewel-studded " tunnel can be seen on the 18-mile long Bhore Ghat on the Bombay-Poona line of the Central Railway (old G.I.P.). In the tunnel is a large cavity lined with crystals of zeolites which shine with amazing brilliance.—*From " East Indian Railway Magazine."*

All's Wool that Ends Wool

Horrified passengers on the 9.47 a.m. train from Hayes to Charing Cross rushed from a carriage when it reached Elmers End saying there was a big black rat inside. Porters armed with sticks found nothing, so the carriage was locked, and the train went on. At Charing Cross another search revealed the " animal "—a ball of black wool.—*From " The Evening News."*

Signal in Seventeen Words

The national language of India (Hindi) is being mummified by . . . Sanskrit scholars who are not content to evolve a Sanskrit Hindi but insist on finding Vedic metaphors for perfectly well-understood English words of current usage. A railway signal becomes something like " a hither-and-thither going-and-coming, showing a metal hand causing fire carts to stop and go." —*From " The Manchester Guardian."*

Disembodied Trams

. . . . There has always been a vague ghost-like sadness about trams. Even in their heyday they always had this curiously insubstantial, *potential* quality, as though they were ghostly ideas waiting for realisation. Their lines issued from quiet, mysterious depots and covered the town like the nervous system for some sixth sense not quite apprehended. They never quite attained the private, solid identity of railways.

One felt there should have been tram *stations,* with flower-beds and waiting-rooms, and attendants in recognisable liveries. But they never became real, they never acquired a folk-lore as trains did.—*Paul Jennings in " The Observer."*

Boxing Railwaymen at Cardiff

All parts of the British Isles were represented at the National Quarter Finals of the British Railways Amateur Boxing Championships, held in Cardiff on Thursday. Approximately 20 contests in the Fly, Feather, Light Welter, Light Middle and Light Heavy Weight classes were decided between 40 competitors—the champions and runners-up in each Region of British Railways. Contestants came from many grades of railway workers and included a fitter, a joiner and a wagon repairer from Glasgow, a clerk from Nottingham, a shunter from Builth Wells and a labourer from Newton Abbot. These contests are stepping stones to the finals, which will take place at the Royal Albert Hall, London, on Friday, April 18.

Spring Clean for Stations

In their spare time railway staff at hundreds of stations, large and small, on the London Midland Region of British Railways are now busy with brush, mop and wash-leather, garden fork and seed catalogue, to give their platforms, waiting rooms and paintwork a brighter and tidier appearance. Their object is to cheer the customers and to qualify for one of the 200 cash prizes offered in a " Best Kept Station " competition which is organised by the Region.

Altogether 710 stations throughout the Region have entered the contest, a special feature of which is that stations without gardens and those in blitzed or dingy surroundings will not be handicapped.

Train Naming Competition

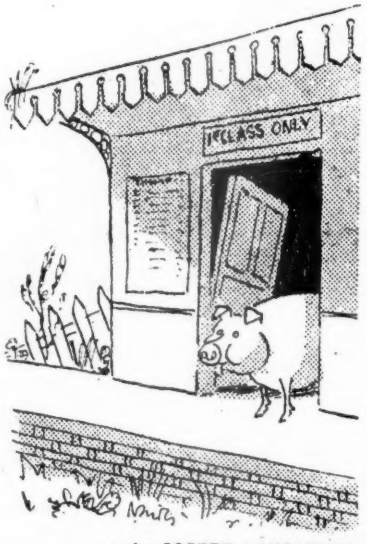
The winning entries in the competition organised by the German Federal Railways (see our February 1 issue) for the best suggestions for names of passenger trains include " Blauer Enzian " (" Blue Gentian," Hamburg-Munich); " Wiking " (Basle-Copenhagen); the " Loreley Express " (Munich-Münster) and " Nibelungen Express " (Cologne-Vienna, these two pairs of trains being routed along the Rhine); " Rhein-Donau Blitz " (" Rhine-Danube Flash," diesel railcar, Dortmund-Regensburg); " Sachsenross " (" Saxon Steed," Bonn-Hanover: the emblem of Lower Saxony is a horse); " Roland " (Frankfurt-Bremen, after Roland, one of Charlemagne's knights, associated in Germany with the Rhine); and " Gambrinus " (Dortmund-Munich, after the mythical inventor of brewing, a basic industry of Munich).

The 19 winning entries received awards. The first prize consisted of 1,200 miles of free travel, second class, over the Federal Railways system, three weeks' inclusive holiday, and a wireless receiver.

Telegraph to Doncaster

It was stated in the half-yearly report of the directors of the Great Northern Railway Company that arrangements had been made with the Electric Telegraph Company for the extension of their system along the Great Northern line, and that the communication was already established between London and Peterborough. Since then the utmost expedition has been used in order to complete the communication to Doncaster in time for the Spring Meeting, and yesterday (Tuesday) afternoon this object was accomplished by a junction of two out of the four wires between Peterborough and Doncaster.

The rates of the telegraph company are:—for 20 words and under, 100 miles distance, 2s. 6d.; above 100 miles, 5s.; and a proportionate charge for any greater number of words.—*From " The Times," quoted from " The Times " of March* 10, 1852.



—by OSBERT LANCASTER

Declining years of an unremunerative branch line as seen by a " Daily Express " artist

Viewpoint

What—scrap the Dome,
Eccentric home
Of ingenuity.
That decorates
Or desecrates
The South Bank scenery?

The lions will
Feel lonelier still,
Look grimmer, leaner grow,
To see the end
Of one more friend
Of just a year ago.

Skylon and Dome
To dust must come,
However men aspire;
Each has its hour,
Like Babel's tower
And Nineveh and Tyre.

South Bank may mourn
Its glories shorn;
One thing at least is true
To those who queue
At Waterloo—
It will improve the view !

A. B.

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

CANADA

Dining Cars for Immigrants

The first of two new Canadian Pacific Railway restaurant counter cars, designed specially to feed immigrants travelling from east coast ports, will go into service next week. About 50,000 immigrants are expected to use them this year. At first it was thought that standard dining cars would feed immigrants adequately, as during the immigration rush after the 1914-18 war, but currency restrictions and the large numbers involved this time have warranted the introduction of the new cars.

The design was drawn up by the C.P.R. sleeping and dining car, colonisation, and mechanical departments after tests last year with stripped-down standard dining cars proved the need of newly-designed stock. The cars, of solid steel construction, will be 80 ft. long and will contain a stand-up lunch counter over 50 ft. long. A kitchen, with stoves, refrigerators, and serving counters, will make it possible to serve hot meals such as bacon and eggs, stews and hamburgers. Sandwiches, coffee, and milk will be available throughout the day.

The cars will also carry a store, where the travellers may buy fruit, tinned meat, bread, jam, and soft drinks.

VICTORIA

New Sitting Cars for "Overland"

Two of the new first class sitting cars, built as joint stock for the Victorian and South Australian Railways, are now in regular service on the "Overland." One runs in each direction between Melbourne and Adelaide.

The vehicles, of saloon design with centre aisle, have rotating, aircraft-type adjustable seats, hot and cold water, iced drinking water, and wide windows. Like the sleeping cars they are air conditioned.

The main lighting is fluorescent, and individual reading lamps are recessed in the luggage racks. The floors of saloons and corridors are covered with carpets, the vestibules and women's powder rooms with linoleum, and the toilets with terrazzo. Hot and cold water is supplied to the toilets and iced water to the drinking founts. The powder rooms are a new feature. They have full-size mirrors, and stools and chairs for six.

The "Overland," composed of six sleeping cars, including two roomettes and two twinettes, and four sitting coaches, will shortly be hauled by diesel-electric locomotives.

Interior of sitting car on "Overland" express, Melbourne - Adelaide, Victorian and South Australian Railways

RHODESIA

Increase in Charges

Increased rates and fares come into force on April 1. Some rates go up by as much as 50 per cent., ordinary passenger fares 18 per cent., and concession fares 38 per cent.

The new rates are expected to bring in an extra £2,000,000. This is the first general revision of charges for more than 20 years, and the system is believed to be the only major one in the world still operating on pre-war rates.

The great economic growth of the territories has hitherto helped the railways to maintain financial stability and, by bringing increasing highly-rated traffic, has enabled them to cover steadily rising costs of operation. Now, however, the heavy capital expenditure which has become necessary to cope with the development of the countries, and the recent growth of low-rated traffic have made a revision essential.

There is a new tariff scale which makes short-distance traffic contribute more adequately to revenue. Free travel will be allowed for children of up to seven years of age; children's fares will apply to the ages 7-16 instead of 3-12, and will be calculated at 40 instead of 50 per cent. of the adult rate.

EAST AFRICA

Delays at Mombasa Port

The Kenya Colonial Government was outvoted by the unofficial majority when a motion by the Opposition was carried calling on the Government "to appoint a fact-finding committee to inquire publicly into the causes of delay in clearing goods from the Port of Mombasa, to apportion the responsibility for the delay, and to make recommendations as to how the matter can be put right." The Government of Uganda, it was further proposed, should be invited to be associated with the investigation.

Members of the opposition maintained that the conference recently held in Nairobi to consider the improvement of transport facilities (see February 29 issue) did not fully serve the interests of the public of Kenya, and contended that representatives of commerce and industry should have participated.

An article in a leading journal praises the work of the Transport Department achieved "within the strained physical limitations of the port and the railway system." The development of the Territories, it continues, has caught up with and passed the capacity of the transport system, and unless money, materials, and men are made available promptly for a large-scale expansion and modernisation of the whole ports and railways undertaking to place them once more in advance of the need, the problems will become worse.

FRANCE

New Retarders at Trappes

The S.N.C.F. has introduced Saxby hydraulic brakes in place of the four Frölich retarders in the marshalling yard at Trappes. Two 45-ton travelling cranes were used to lift the Frölich retarders from the track, after which a low-side wagon containing the Saxby brakes was placed alongside the pit on an adjoining track. The new installation was then lifted from the wagon and placed in position by the two cranes working simultaneously.

End-Load Testing Machine

An end-load testing machine, stated to be more powerful than any other in Europe, has been installed by the S.N.C.F. at Vitry testing station. It has been designed to test the resistance to compression of rolling stock, and consists essentially of a framework measuring 218 ft. by 11 ft. 6 in., inside which hydraulic jacks are able to extert a pressure of up to 900 *tonnes*.

There is an equally powerful testing machine at the Budd plant in Philadelphia. The next most powerful in Europe was that used before the war at the Reichsbahn testing station at Grünewald: it could exert a pressure of 250 *tonnes*.

The Vitry installation is intended not only to apply symmetrical loadings, but has also been designed for diagonal and eccentric loading such as the rolling stock is likely to be subjected to in practice. The first tests carried out on it were on the underframe of the prototype standard European covered wagon, whose construction was entrusted to the S.N.C.F. by the International Union of Railways. The dimensions of the end-load testing machine enable almost all types of European goods wagon to be accommodated, and the S.N.C.F. has expressed its willingness to place the plant at the disposal of foreign railways.

Suburban Train Services in Business Hours—2*

Practical application of ideas to the Liverpool Street—Shenfield electric service

(*By a Correspondent*)

LEST it be thought that the general considerations outlined in the first part of this article are only of theoretical value, it may be useful to examine the electric services provided during the period of heaviest traffic on the down slow line between Liverpool Street and Shenfield, and introduced in its present form in November, 1949.

The characteristics of the line are a dense traffic to and from the London terminal and an appreciable movement of passengers between the suburban stations themselves. There are two up and two down lines throughout, the main lines carrying a heavy service of steam trains of main-line character, in addition to the electric service hereafter described.

Shenfield is just over 20 miles from Liverpool Street and there are twelve intermediate stations between these terminal points. An examination of the timetable shows that for train service purposes the stations are grouped in the following order from Liverpool Street and the quasi-terminal of Stratford:—

Group 1. Maryland, Forest Gate, Manor Park
Group 2. Ilford (only)
Group 3. Seven Kings, Goodmayes, Chadwell Heath
Group 4. Romford, Gidea Park, Harold Wood, Brentwood, Shenfield

* Part 1 of this article appeared in our March 7 issue.

The first group is served by all-stations trains which terminate alternatively at Gidea Park and Shenfield. Although the last station in the group, Manor Park, is only 6 miles 18 chains from Liverpool Street, the all-stations service is extended up to 13½ or 20 miles to cater for the inter-suburban traffic previously mentioned. The next group, which caters for the heavy Ilford traffic, is served by a Liverpool Street—Ilford train, calling only at Stratford, and covering the 7 miles 27 chains in 14 min.

The third group is served by a train which calls at Stratford, runs non-stop to Seven Kings, and thence locally to Gidea Park. The stations in this group are served thus:—

—	From Liverpool Street	
	Distance (M. Ch.)	Journey time (Min.)
Seven Kings	8 44	15
Goodmayes	9 22	17
Chadwell Heath ...	9 77	19

Although the group 3 trains proceed as far as Romford and Gidea Park, these stations are best served by the group 4 service which runs non-stop from Liverpool Street to Romford and then calls at stations to Shenfield. The speed of the service is indicated below:—

—	From Liverpool Street	
	Distance (M. Ch.)	Journey time (Min.)
Romford	12 29	17
Gidea Park	13 40	20
Harold Wood ...	14 78	23
Brentwood	18 14	29
Shenfield	20 14	33

Trains of the first three groups run in sequences of 10 min. exclusively over the local line. The fourth group is served by one train each 20 min. over the fast line as far as Gidea Park and the slow line from there to Shenfield. This train appears in each alternate 10-min. sequence.

The basic service during the business hours is therefore:—

Group 1—Local service each 10 min.
Group 2—Fast service each 10 min.
Group 3—Fast service each 10 min.
Group 4—Fast service each 20 min.

The service over a period of 40 min. is illustrated in Fig. 4.

The principles these notes have attempted to describe are applicable

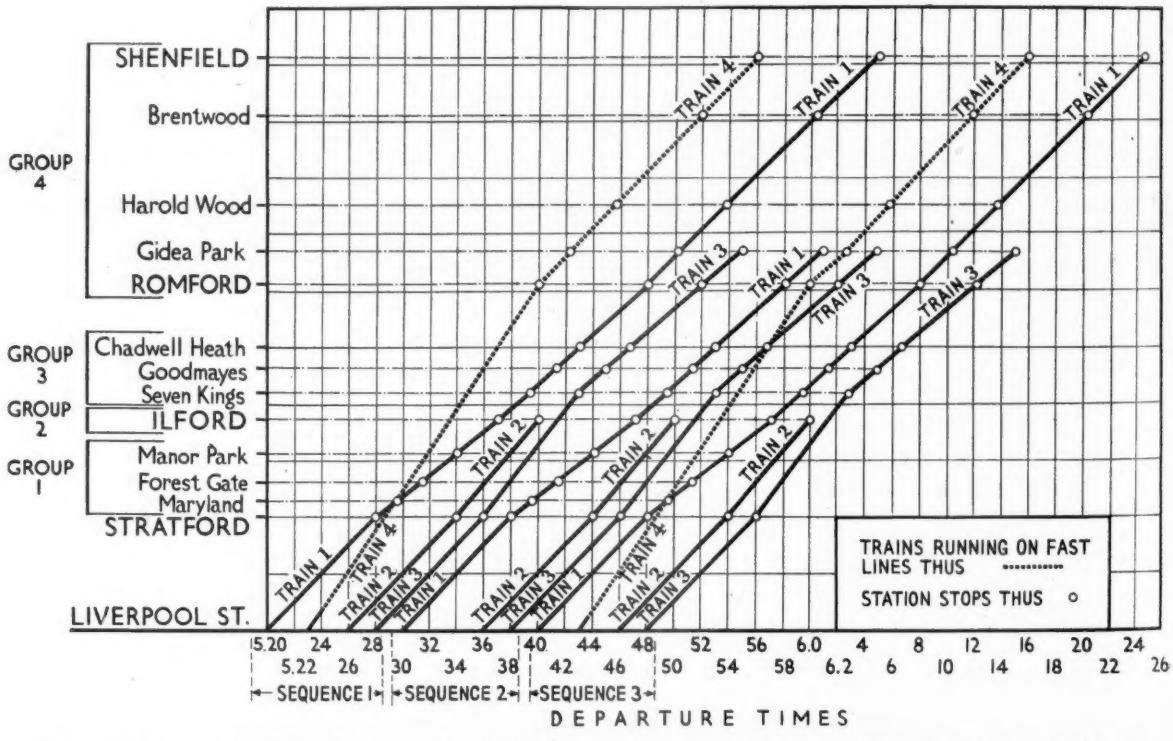


Fig. 4—Diagram of Liverpool Street—Shenfield electric services in peak hours, giving through service for all intermediate passengers and fast services to all except the inner stations

both to steam and electric trains. They do not depend in any way on the means of traction. Whatever the future of the main lines (and it appears that electrification, with overhead collection of current, will be the trend) there seems little doubt that for suburban services electrification with multiple-unit operation will gradually replace steam traction as financial and other considerations permit. Considerations of amenity and public pressure may outweigh cold calculations of the return on capital.

Nevertheless, it must be many years before any great proportion of suburban lines is electrified, even if projects are pushed forward with all speed. What of the steam services in the meanwhile? Steam locomotive enthusiasts fighting a rearguard action against the advance of electrification will say that it is an unequal contest, with the dice heavily loaded against steam traction; that handsome gifts such as new signalling, extensive track alterations, and fly-over junctions are showered on the newcomer, quite apart from completely new motive power units and passenger carriages—gifts for which the steam engine has long been panting.

Whatever the truth of these allegations, there seems to be a tendency to regard suburban steam services as having reached their maximum utility. But pending electrification, could not a material improvement be effected by a series of comparatively small measures, costing only a fraction of a complete electrification scheme? Only a close examination of each service would reveal what changes, if any are required, would produce the greatest benefit—maybe an improvement in terminal layout here, the provision of an engine run-round or spur road there, or a turn-round engine somewhere else.

Compared with the planning of main-line services, the arrangement of suburban services is prosaic and unromantic, and perhaps does not receive as much detailed consideration as it might. At the same time a continuous study of the needs of suburban passengers and of the means by which they can best be met can be both absorbing and rewarding. The purpose of these notes is to throw out some lines of thought on the subject and to illustrate that they are capable of realisation.

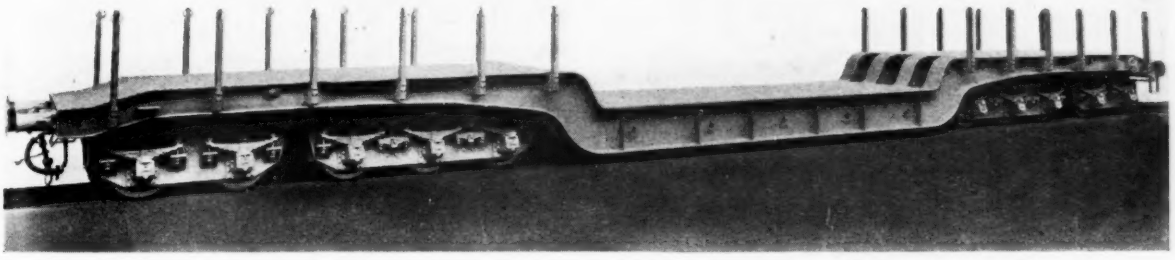
(Concluded)

Well Wagon for Israel

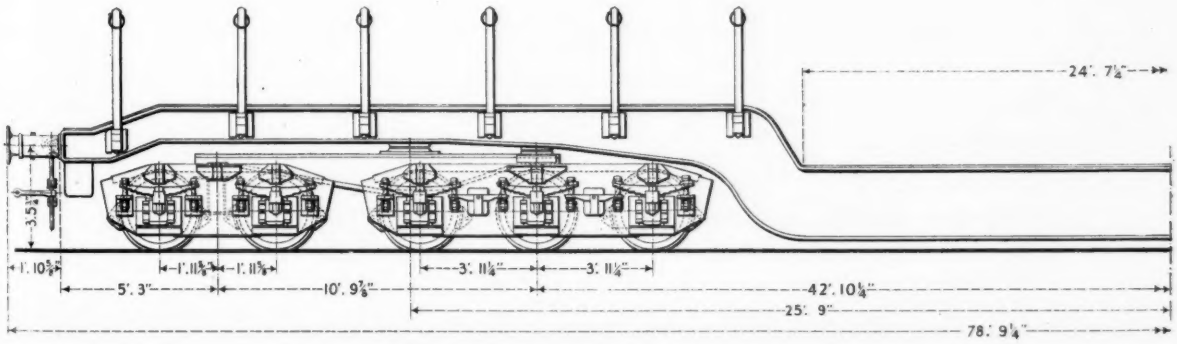
Designed for the transport of large transformers and alternators

A WELL wagon of 120 tons capacity has recently been supplied by S.A. des Ateliers de Construction de Familleureux, Belgium, through its agent, C. M. Hill & Co. (Engineers) Ltd., to the Palestine Electric Corporation. It was designed for the transport of large transformers and alternators and will operate on the Israel Railways.

The wagon is of all-welded construction using a special alloy steel of 35-40 tons tensile. Designed for a load of 120 tons the wagon weighs only 50 tons. A feature of the design is that the main frame is carried through load-equaliser beams on two composite bogies, each consisting of a three-axle and a two-axle bogie. The wagon is equipped with Westinghouse brakes. The overall length of the wagon is 80 ft. The gauge is 4 ft. 8½ in.



Well wagon of 120 *tons capacity for transporting transformers and alternators*



Half-section of the well wagon showing the principal dimensions. Both ends are identical

Articulated Electric Locomotives for New Zealand

Features new to British constructional practice in Bo-Bo-Bo design for service over severe curvature and gradients

NEW electric motive power is being provided to permit higher scheduled speeds and heavier trailing loads in passenger and goods traffic on the New Zealand Government Railways main line from Wellington to Paekakariki, and the 23-mile extension of this electrified section to Upper Hutt. Seven 1,500 V. d.c., 3-ft. 6-in. gauge mixed traffic electric locomotives for these services have been designed by The English Electric Co. Ltd. in co-operation with Robert Stephenson & Hawthorns Ltd., who also supplied the mechanical parts. The contract was subject throughout to the approval and inspection of the Consulting Engineer for the New Zealand Government Railways, Mr. Ranald J. Harvey.

An innovation as far as the New Zealand Government Railways and British manufacturers are concerned is that the design embodies a double articulated superstructure carried on three two-axle motor bogies. This feature will provide great flexibility on the severe curves of the section where the locomotives will operate.

Performance Requirements

The new locomotives are rated at 1,800 h.p., compared with the 1,240 h.p. of those already in service, and are required to meet the following performance specification:—

Freight trains—one locomotive to haul 600 tons trailing between Wellington and Upper Hutt at a free running speed of 30 m.p.h., and to be capable of starting a 500-ton train on a 1 in 57 up grade and continuing to run.

Passenger trains—one locomotive to haul 400 tons trailing between Wellington and Upper Hutt at a speed of 55 m.p.h. on level tangent track with a maximum safe speed of 60 m.p.h. The locomotive performance curves are shown in Fig. 1.

Leading particulars of the locomotives are given in the table below:—

Wheel arrangement	Bo-Bo-Bo
Locomotive weight	75 tons
Maximum axleload	12½ tons
Track gauge	3 ft. 6 in.
Length over drawgear ...	62 ft.
Maximum height	11 ft. 9 in.
Maximum width	8 ft. 6 in.
Wheel dia.	3 ft. 0½ in.
Nominal d.c. voltage	1,500 V.
Number of traction motors ...	Six
1-hr. rating of traction motors	300 h.p.
Continuous rating of traction motors	250 h.p.
Gear ratio	61/17
Ventilating air per motor ...	1,500 cu. ft. per min.
Locomotive ratings at 1,500 line V.:	
Full-field 1-hr. rating ...	23,300 lb. tractive effort at 28 m.p.h.
Full-field continuous rating...	18,400 lb. tractive effort at 30 m.p.h.

Body Mountings

Each half superstructure is carried on the outer bogies by centre bearings only. The articulation is arranged so that one half rests on the centre bearer and two side bearers of the second half, which itself is carried on the middle bogie. With this arrangement the outer bogies are free to accommodate themselves to track inequalities without influencing the weight distribution at the rails. The movement of the bogies relative to the superstructure is only approximately one half of that for a completely rigid superstructure, and the side forces on the track and the clearances to track structures are appreciably reduced. Such a design also permits the overall length to be greater than that of a single superstructure locomotive and facilitates accommodation of the electrical equipment.

Each half body is built up from an underframe comprising two central and two outer longitudinal channel sections running the full length of the body, riveted together and braced with cross members and plates. The floor is covered overall with ¼-in. steel plate. The space between the centre longitudinals is used to form air ducts for traction motor ventilation. Removable covers on the underside of each duct provide accessibility for cleaning.

Steel dragbox castings are riveted between the centre longitudinals at the outer ends and accommodate New Zealand standard Janney yoke drawgear incorporating special rubber springs. The buffer beams are single steel plates to which are fixed tubular type cowcatchers with shunters' steps. Steel castings forming the bogie and articulation centre are riveted between the centre longitudinals at the articulation.

Disposition of Equipment

A body consisting of a pressed steel driver's cab and a high-tension compartment fabricated from sheet steel, riveted and welded to angle and channel section framing members, is built up on each half underframe. Two main resistance compartments are constructed behind each driver's cab and are separated by a central corridor with access panels. The resistance frames are supported on fabricated brackets and are self-ventilated with air drawn through louvres in hinged doors in the locomotive sides. Guiding vanes ensure that the air is admitted to and distributed evenly over the underside of the resistances. The roof over the two compartments is removable to allow the resistance frames to be withdrawn, and carries the air exhaust cowls.

The main compartments are situated behind the resistance compartments and extend to the articulation in each case. These house the main equipment frames and auxiliary machines. Each roof carries a pantograph, and is removable. Air for ventilating the traction motors is drawn in through oil-wetted filters in the locomotive sides. Hinged access

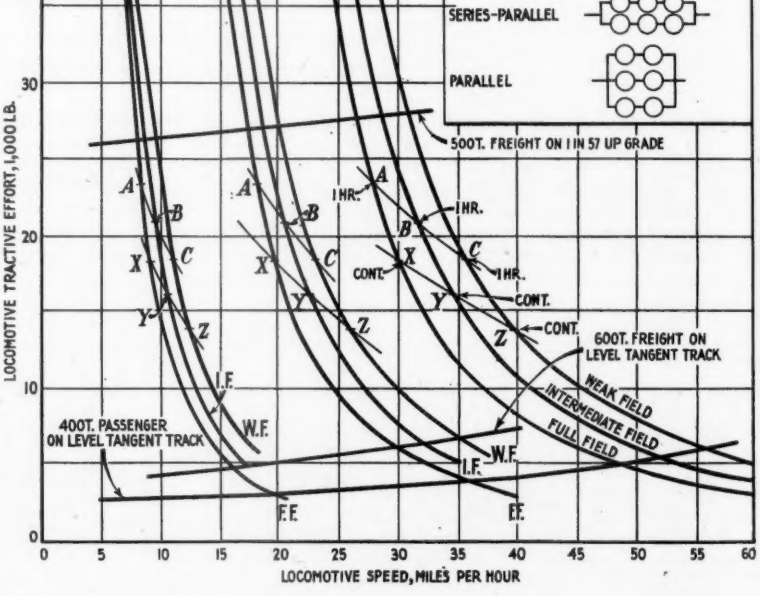


Fig. 1—Locomotive performance curves and motor groupings

doors are provided to enable the auxiliary machines to be withdrawn easily during overhauls. The flexible connection between the superstructures consists of a canvas vestibule supported on lazy tongs. Flexible electric cables and air hoses are carried across the articulation and are separated from the central gangway by sliding steel covers.

One-Piece Cast Steel Bogies

The bogies, cast by the English Steel Corporation Limited, are the first one-piece cast steel type to be used for electric locomotives built in Great Britain. Special features are outside swing links, semi-elliptic leaf springs and coil springs for bolster springing, and a one-piece frame casting with all brake hanger and motor suspension brackets cast integrally with the frame. The frame casting is a box structure, but openings have been left so that the laminated bearing springs over the axleboxes are completely accessible and visible. Ballast is carried on each bogie to counteract the out-of-balance which otherwise would be caused by the arrangement of brake gear and air-operated automatic slack adjuster.

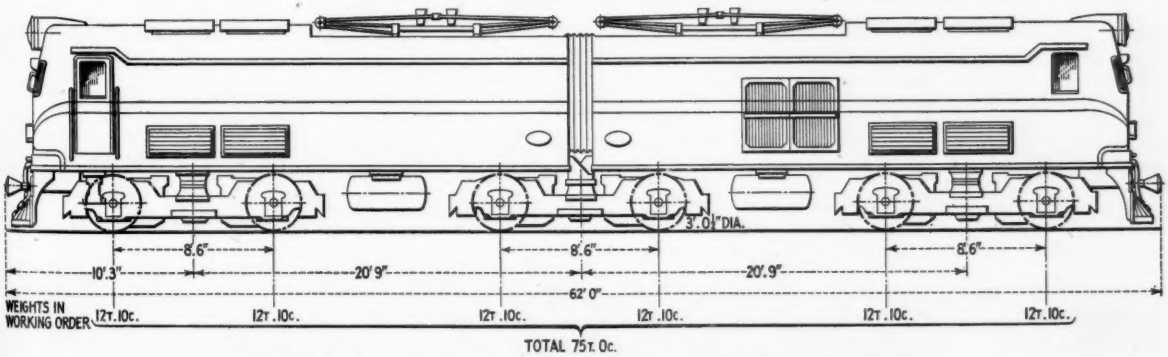
The load from the superstructure is carried on large centre castings, the upper casting being attached to the underframe and the lower casting to the bolster. Side bearers with renewable faces are located at wide centres on the top face of the bolster to provide a large restoring couple to counteract the roll of the superstructure.

The bolster itself is also a one-piece casting and is carried on a cast-steel spring plank through four nests of coil springs and two semi-elliptic springs. Four inclined swing links outside the bogie frames support the spring plank and the springs are exposed so that they can be renewed without lifting the superstructures off the bogies. Side movement of the bolster is controlled by the centralising action of the coil springs, and the maximum movement is limited by rubber stops fitted inside the bogie frames.

Bearings and Suspension

The two motored axles of each bogie carry rolled steel disc wheels with renewable steel tyres. A double roller bearing is fitted outside each wheel centre and each wheel is sprung by means of laminated bearing and auxiliary coil springs. Two brake cylinders are carried on each bogie and operate two clasp brake blocks per wheel through equalised brake rigging and two automatic air-operated slack adjusters. The locomotive is fitted with both automatic and independent air

One of seven 1,800 h.p. Bo-Bo-Bo locomotives being supplied to the New Zealand Government Railways by the English Electric Co. Ltd. The mechanical parts are built by Robert Stephenson & Hawthorns Limited



Principal dimensions and weight distribution of Bo-Bo-Bo locomotive

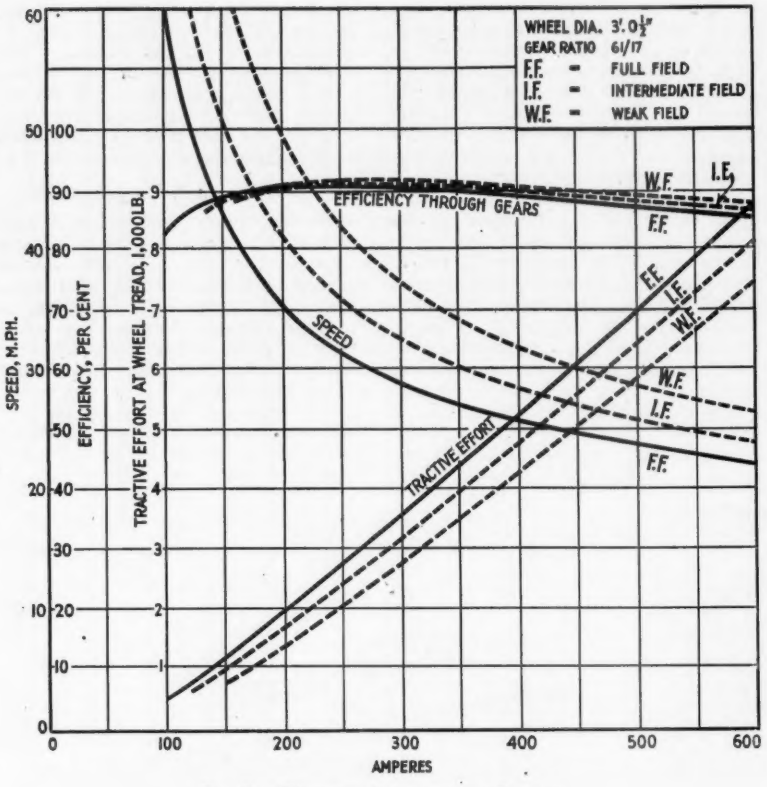


Fig. 2—Characteristic curves of motor

valves, and brake pipes are provided for use with air-braked stock.

Two axle-hung, nose-suspended traction motors, with forced ventilation, are mounted in each bogie. The electropneumatic contactor control scheme provides three groupings, with shunt transition, namely series, series-parallel (two parallel groups of three motors in series) or parallel (three parallel groups of two in series). Two weak-field positions are available in each grouping, the first obtained by diverting a portion of the fields and the second by tapping out the diverted portions. There are therefore nine economical running speeds, in addition to which the long time-rating of the resistances in the series connection permits a certain amount of shunting. There are 29 resistance notches in all.

Overload protection is provided by four overload relays, three in the traction motor circuits and one in the main power feed to protect the main starting resistance. Two groups of two line-breakers in series operate in conjunction with two of the resistance contactors to break the power circuits in fault conditions. Three motors can be cut out by means of either of two hand-operated switches in case of a failure, the locomotive continuing to run on the other three. Operation of either cut-out switch pre-sets the series-parallel grouping switch. The motor characteristic curves are shown in Fig. 2.

Cab Layout

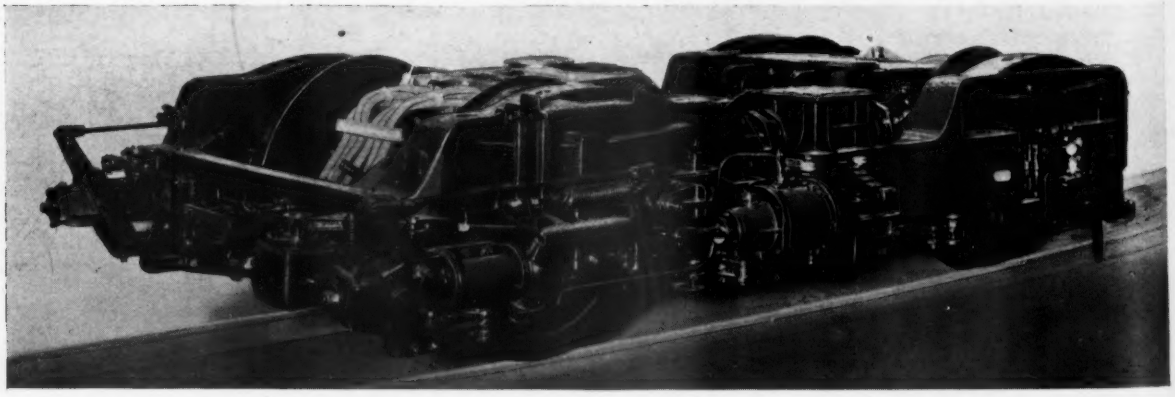
The cab is arranged for one-man operation of the locomotive, the driver's seat being placed centrally. On his right are the master controller handwheel and reversing handle. After notching up to full series or series-parallel on the handwheel, the reversing handle may be operated to give the two weak-field settings. The weak-field notches in parallel are selected by the controller handwheel. A useful facility is the ability to notch back at any stage without returning to the "off" position, thereby preventing undue drawbar shock and reducing surges on the overhead line.

Most of the driver's instruments are on a central hinged panel. Three ammeters are fitted in each cab, one reading during series running, two while in series parallel, and all three on the parallel notches. The driver thus is shown the individual currents for each motor group.

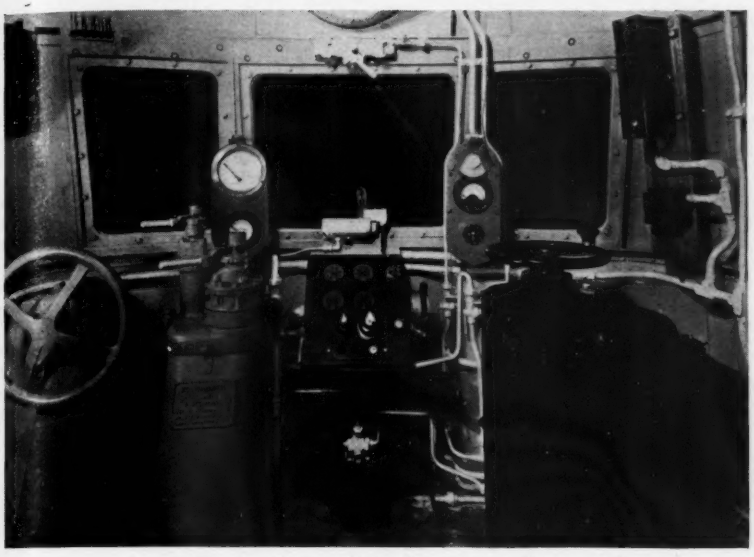
Brake gauges and a speedometer are mounted on the centre window pillars. The air brake valves are on the left of the driver's seat, and next to them is a handwheel for applying the hand brake on the adjacent bogie. A sun visor and air-operated windscreen wiper are fitted to the central look-out window.

Auxiliary Equipment

Current is collected by one of two double-pan air-operated pantographs and fed to the locomotive through isolating switches interlocked with the supply to the pantograph air cylinders. A further isolating switch is fitted in the feed to the traction circuits, while the auxiliary supplies are taken through a hand-operated circuit-breaker. The motor-generator set, supplied from this circuit-breaker, provides an output of 120 V., maintained by a carbon pile voltage regulator, for control and lighting. Experience with English Electric motor-generator sets already in service led the administration to decide that a main battery was unnecessary in these



Motor bogie with one-piece frame casting incorporating brake hanger and motor suspension brackets



Arrangement of controls in the one-man driving cab

locomotives, and only a small 6-V. battery for emergency lighting is provided.

The two motor-blower sets are also supplied direct from the circuit-breaker, but the two motor-driven compressors (for control, braking and auxiliaries) are controlled by a contactor with switching facilities from either cab. Similar control is provided for the three 500-W. heaters in each cab.

Auxiliary machines can be removed through drop panels in the body sides, the panels being designed to support the weight of the equipment when lowered to the horizontal position to facilitate withdrawal.

The lighting facilities are comprehensive, and the three groups of 120-V. circuits include shunters' stop lights and inspection light sockets. Failure of the generator output causes operation of a relay incorporated with the cut-out in the trickle-charge circuit of the 6-V. battery and switches in the emergency lighting circuits. These are equipped with 3-W. lamps and include inspection sockets.

An unusual step has been taken in dispensing with interlocks for the access covers over H.T. equipment. All covers protecting such equipment, including machine commutator covers, are painted signal red and labelled with warnings that the pantograph must be lowered before they are removed for access to the aparatus.

British Manufacturer's Traction Activities

Railway equipment supplied by the G.E.C.

MUCH of the electrical equipment being manufactured by the General Electric Co. Ltd. for the 40 3,000-h.p. locomotives for the South African Railways has been delivered, and the locomotives are in course of erection at the works of the North British Locomotive Co. Ltd. A 3,000-V. electro-pneumatic contactor has been designed for these locomotives with a liberal continuous rating at 3,000 A., and for operation at voltages up to 4,000. The production model has passed its tests with an ample margin.

The master controllers for this South African order also have a dust-tight enclosure for the cam-operated, butt type, silver-tipped contacts. A trolleybus controller with similar contacts has been in operation for two years without being adjusted or touched in any way.

During the year an order for seven electrical equipments for London Transport battery locomotives has been completed, and further batches of traction motors have been supplied to the Executive for tube and surface line rolling stock.

Deliveries have been made of trolleybus equipment for Cardiff, and Hobart, Tasmania. In Reading, a trolleybus with an improved form of rheostatic brake has been running successfully for about a year. This arrangement not only gives a favourable shape of braking curve, since the braking effort is maintained almost to standstill, but also results in the copper in the motors being used more efficiently. A further repeat order for 24 trolleybus equipments has been received from the Belfast Corporation Transport Department.

A further order for nine motor coaches, four driving trailers, and one trailer has been received from the Estoril Electric Railway, Portugal. This rolling stock will be identical with the coaches already supplied to the same railway apart from a few minor changes based on running experience with the earlier stock delivered the previous year. The eight North British/G.E.C. diesel-electric locomotives for the Ceylon Government Railway were completed during the year and most of them are in service. These locomotives are employed for general yard shunting at Colombo, and for hauling goods trains on branch lines.

Ten out of sixteen G.E.C. 1,200-kW. mercury arc rectifier equipments have been put into service with the Netherlands Railways. A feature of these rectifiers is the incorporation of high-speed, electronically-controlled arc suppression by grid control.

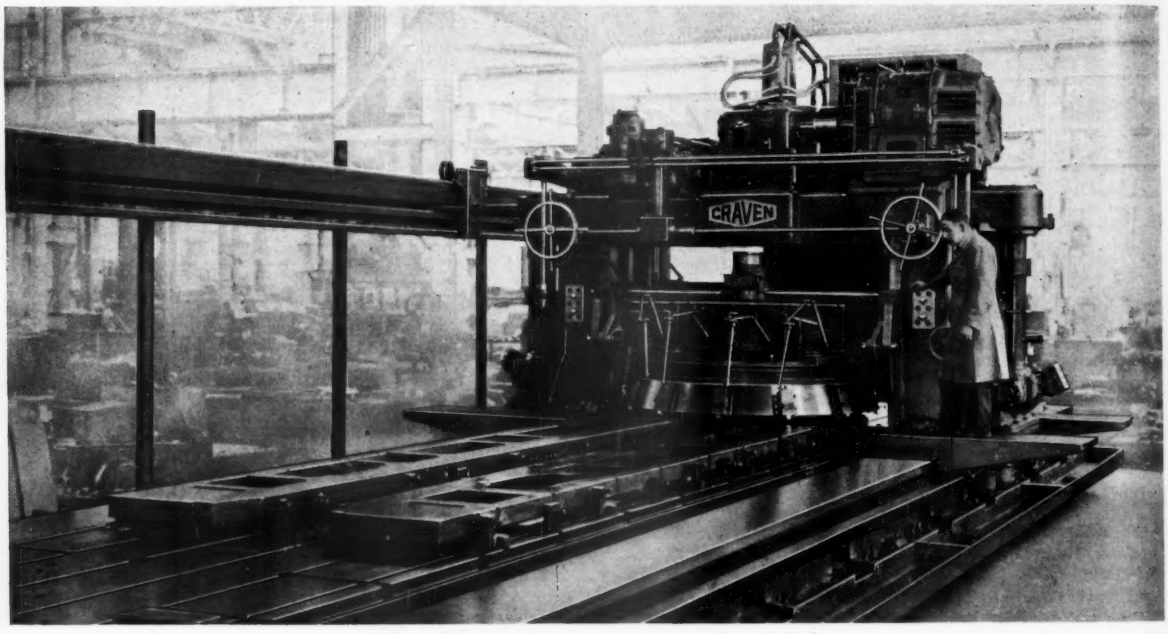
London Transport Light Alloy Rolling Stock

Train of four light alloy cars and two steel driving cars placed in service on the District Line, London Transport, on March 10 (see our March 14 issue)

Locomotive Frame Milling Machine for India

Double-headed construction incorporating auxiliary heads for machining small radii

OUR April 20, 1951, issue contained an illustrated article describing the three-headed locomotive frame slotting machine built by Craven Bros. (Manchester) Ltd. for the Indian Government Railways locomotive works at Chittaranjan. The same firm has recently completed a machine, also for Chittaranjan, for milling locomotive frames manufactured from rolled slab. Designed for the use of large diameter milling heads with inserted cutters, the machine also incorporates smaller auxiliary heads for the attachment of cutters suitable for machining small radii, cylinder location, axlebox horn radii, and so on.



The machine under test at the maker's works

Principal Design Features

The machine comprises a heavy baseplate 70 ft. long by approximately 11 ft. 3 in. wide. The central portion of the baseplate is arranged as a work table, is 6 ft. 9 in. wide, and provided with tee-slots and holes for locating and clamping locomotive frames. Features of construction and control are in accordance with heavy machine tool practice.

Two independently-driven units are provided, each consisting of two uprights mounted on separate base saddles tied at the top by a deep section cross-stay to form a rigid bridge-type construction. Outer slideways are provided on each side of the work table, to carry the two travelling machine units. The main milling head is centrally housed in an adjustable cross-beam supported between slideways of ample bearing surface, forming the inner faces of the uprights.

A cross-slide, integral with the rear of the cross-beam, carries an auxiliary milling head. The beam assembly is arranged with fine hand-operated, vertical adjustment, and also rapid power elevation for setting purposes and cutter application. Clamping is provided to lock the beam to the uprights during machining operations. Both machine units are identical.

In each case the main cutting head is 6 ft. 9 in. diameter, and of cast iron, into which are inserted in its periphery, 12 tool blocks to form a face milling cutter. The head is carried on a vertical spindle of ample diameter rotating in phosphor-bronze bearings and supported by an inverted vee-type, white-metal lined, circular bearing track which absorbs cutting thrust. A ball thrust bearing withstands the load of the spindle and cutting head in a vertical direction.

Cutter speeds range from 1½ to 6 r.p.m.; the drive is by a 25-h.p. variable-speed, reversing motor mounted on its cross-stay. Transmission is through a primary worm gear reduction unit and vertical splined shaft to intermediate gearing in the cross-beam. The final drive is by dual pinions which mesh with an internal spur ring in the body of the cutter head.

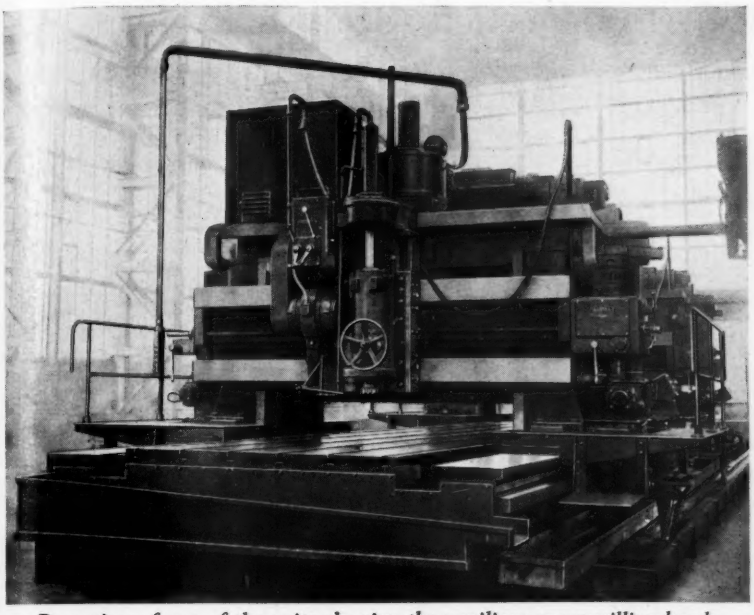
The maximum and minimum height beneath the cutting head are 15 in. and 5 in. respectively. Two elevating screws are provided on the inside faces of the uprights. Fine adjustment is obtained through two handwheels; one revolution corresponds to ·02 in. movement of the cutter head. Quick traverse of 12 in. a min. is provided by means of a 10-h.p. constant-speed reversing motor.

Six longitudinal milling feeds are provided with a speed range from ·28 in. to 2·8 in. per min., obtained by the power traverse of the machine unit along the base slideways, and are applicable to both main and auxiliary milling heads. The feed drive is by a 3-h.p. motor and feed change gearbox through spiral gears and vertical shafts, to a reduction gear in the saddles.

Provision is made for the elimination of backlash in the pinions engaging in the rack at the front and rear of the bedplate; the pinions are coupled together to drive in unison. Rapid traverse is provided by the same mechanism but is derived from the 10-h.p. elevating motor. Control levers are placed conveniently on the side of both uprights.

Auxiliary Milling Head

Mounted on its own saddle, the self-contained auxiliary milling head is fitted to the rear of the cross-beam. The spindle revolves on roller and angular contact bearings, and is bored to suit standard milling cutters and adaptors.



Rear view of one of the units showing the auxiliary cross-milling heads

Driven by a separate 10-h.p. motor, spindle speeds range from 12 to 98 r.p.m. through an 8-speed gearbox. The spindle slide is carried in vee-type slideways and has a 21 in. vertical adjustment relative to the cross slide. The lower face of the slide is provided with circular tee-slots for attachment of outer milling arbor supports or a special horizontal milling spindle attachment.

Transverse feed and quick traverse along the cross-slide is by separate 3-h.p. motor and gearbox. Six feeds from ·5 to 4 in. a minute are provided, transverse travel is approximately 7 ft. 5 in. extending over the full width of the work table.

Electrical Controls

The machine is arranged to operate from 400 V. three-phase 50 cycles a.c. main supply. A motor-generator set, controlled by an auto-transformer starter, is used to supply d.c. current for the 25-h.p. variable-speed milling head motors. The other motors operate from the a.c. supply. Both a.c. and d.c. current are conveyed by supply bars mounted on an elevated gantry, and collector shoes attached to each machine unit.

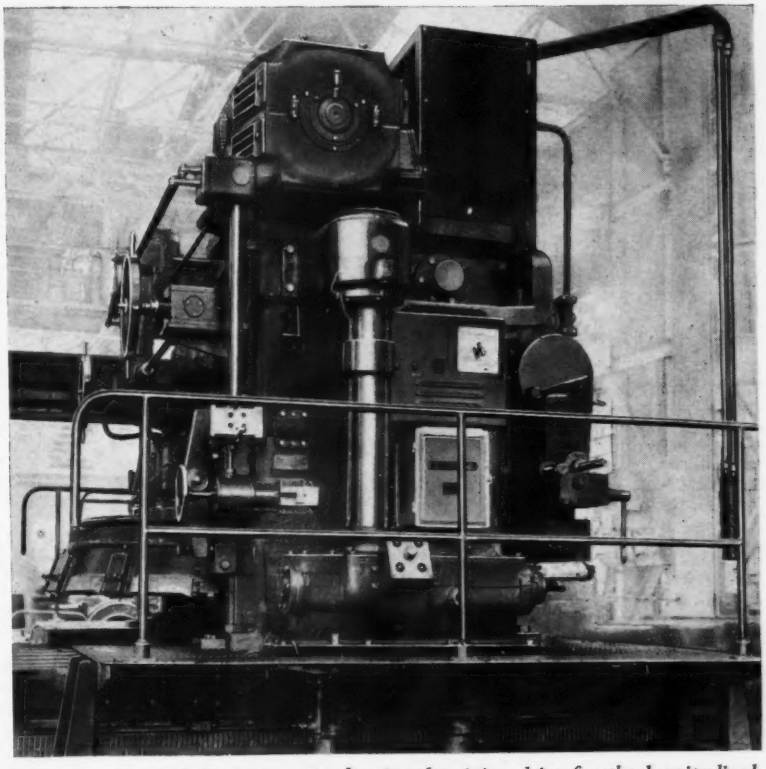
A main control panel on the cross-stay of each unit houses the switchgear for the main milling head motor and the 10-h.p. elevating and quick traverse motor. Smaller panels attached to the uprights control the two 3-h.p. feed motors and the 10-h.p. auxiliary milling head driving motor. There are separate speed regulators for each main variable-speed motor. Identical push-button stations on the front of each upright control the main milling spindle motor and the longitudinal feed motor and include "forward" and "reverse" inching buttons for elevating and quick-power traverse motor.

Additional controls at the rear of the uprights include further push-buttons for the elevating and quick traverse motor together with controls for the suds pump unit. Pendent-type controls at the rear of each machine unit contain push-buttons for the auxiliary milling head, and duplicate controls for the longitudinal feed motor and for the elevating and longitudinal quick traverse motor.

A feed selector switch, mounted on one of the smaller control panels, has four positions to allow for milling with the main cutter head using the longitudinal feed; milling with both spindles and longitudinal feed; milling with the auxiliary spindle and longitudinal feed; and finally milling with the auxiliary spindle in conjunction with the transverse feed. In each instance it is impossible to start the particular feed motor until the appropriate milling spindle is running, and if the spindle motor stops, then the feed motor will also stop.

The longitudinal quick power traverse and elevating motor can be used with the selector switch in any of its four positions; a "test" push-button in the pendent control station enables the transverse feed and quick traverse motor to run for setting purposes with the auxiliary milling spindle motor at rest.

SAMUEL JONES & CO. LTD. DISPLAY AT B.I.F.—At the British Industries Fair the display of Samuel Jones & Co. Ltd. will include adhesive mending tapes, doyleys, postal wrappers, decorative transfers, lampshade parchment, gummed and coated papers, "Camberwell Beauty" sealing machines, one being a new automatic sealer, designed to pack anything from the smallest parcel to the largest bale.



Side view of one of the main units showing the pinion drive for the longitudinal feed traverse

Remodelling of Gretna Junction, Scottish Region

Permanent way and signalling alterations permitting higher speeds on both lines

Relaid junction at Gretna, looking south

AT Gretna Junction, approximately nine miles north of Carlisle on the border between England and Scotland, diverge the two main lines to Glasgow, one the former Caledonian route *via* Carstairs and the other that of the former Glasgow & South Western *via* Dumfries and Kilmarnock. When the junction recently became due for renewal, the layout was completely remodelled and the old E switches and 1 in 16 crossings with 1 in 8 fixed diamond were replaced in the new layout by F switches and 1 in 20 crossings and a 1 in 12 switch diamond. The consequent easing of curvature, with the application of cant by means of two-levelling, permits higher speeds and easier running throughout the junction and its approaches.

The speed restriction on the down main line to Carstairs has been raised from 60 m.p.h. to 75 m.p.h., on the down line to Dumfries from 60 to 65 m.p.h., and on the up line from Dumfries, from 40 to 50 m.p.h. The up line from Carstairs remains unrestricted.

The remodelling required considerable alterations to both permanent way and signalling, and the points of the new junction are over 100 ft. south of the position of the old points. The new layout was manufactured in 109 lb. flat-bottom materials, and the 1 in 12 switch diamond is the first to be laid with this material in Scotland.

Each pair of diamond switch blades is operated by a separate lever in the signalbox; the facing point locks are controlled by another lever, and electric detectors, fitted on both sides of the switch diamond points, ensure that the signals leading over the switch diamonds cannot be cleared unless the switches are lying in the correct position and bolted.

The Civil Engineer and the Signal & Telecommunications Engineer of the Scottish Region were responsible for the completion of the work. The switches and crossings were manufactured by Taylor Bros. (Sandiacre) Limited.

Gretna Junction, looking north, with switch diamond crossing set for up Dumfries line. Facing points in the foreground are bolted

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RECONSTRUCTION AT PARTICK STATION, SCOTTISH REGION.—A start has been made with clearing the site for new station premises at Partick, on the Glasgow Queen Street-Milngavie-Dumbarton line. The premises will replace the station buildings on the up Glasgow departure platform, which during the war was badly damaged by enemy action. The building will be in brick and reinforced concrete. It will have a frontage to the platform of 97 ft. and will comprise waiting room, ladies' waiting room, staff accommodation and a waiting shelter. The roof will project 8 ft. over the platform to give increased shelter. The contractors are Anderson and King, Glasgow, and it is expected that the premises will be available by the autumn.

SCHOLARSHIPS TO STUDY PRODUCTION TECHNOLOGY AND MANAGEMENT IN U.S.A. The Ministry of Education has announced that 75 scholarships are to be awarded this year for the study of production technology and management in selected universities or technological institutes and in industrial undertakings in the United States. The awards will be made in two groups. Successful candidates will be expected to leave for the U.S.A. early in September, 1952. The closing dates for applications are April 16 and 30, according to the award group. Full details may be obtained from the Ministry of Education (F.E. Division 1), Curzon Street, London, W.1.

INDIAN RAILWAY RESEARCH CENTRE.—An agency message from Lucknow states that a railway research centre is shortly to be set up in Lucknow to carry out applied research on problems related to wheels, rails, and locomotives. A sum of Rs. 1,800,000 is being spent on laboratory and other scientific equipment.

RAILWAY NEWS SECTION

PERSONAL

Mr. A. Saldanha, formerly Chief Engineer of the Great Indian Peninsula Railway, has been appointed Chief Engineer, Central Railway, India.

Mr. A. N. Butland, District Engineer, Bristol, Western Region, has been appointed Assistant Civil Engineer, North Eastern Region, York.

Mr. E. R. Dewdney, Assistant to Superintendent Marine Engineer, Southampton, who, as recorded in our March 14 issue, has been appointed Executive Officer (Marine), Railway Executive headquarters, London, started his career in 1916 as an apprentice in the L.B.S.C.R. workshops at Newhaven. He served in the Inns of Court Regiment, and returned in 1919. On completion of his apprenticeship, he joined the Newhaven-Dieppe service, becoming in turn Third and Second Engineer, before being appointed Chief Engineer of the ss. Arundel in 1927. Subsequently he was Chief Engineer on all the Newhaven vessels. During the 1939-45 war Mr. Dewdney served in the Royal Navy as Lt.-Commander (E), R.N.R., principally in the Mediterranean. On demobilisation in 1945 he was appointed Southern Railway Resident Engineer in the yard of William Denny & Bros. Ltd., Dumbarton, and, in 1947, became Assistant to Superintendent Marine Engineer, Southampton, dealing particularly with the construction of new ships.

Mr. E. R. Dewdney
Appointed Executive Officer (Marine), Railway Executive headquarters

London Midland Region Appointments

The London Midland Region of British Railways has announced the following appointments:—

Mr. J. G. Norton, hitherto Chief Personnel Officer to the Hotels Executive, to be Assistant (Salaried Staff) in the office of the Regional Staff Officer, London Midland Region.

Mr. G. S. Hill, Divisional Welfare Officer, Manchester, & General Ambulance Secretary, to be Welfare Officer.

The Scottish Region of British Railways has announced the appointment of Mr. C. J. H. Selfe, District Commercial Superintendent, Dundee, as Assistant Commercial Superintendent.

Mr. A. F. Wigram, A.M.I.E.E., M.I.R.S.E., Assistant Signal & Telecommunications Engineer, Reading, Western Region, who, as recorded in our March 14 issue, has been appointed Signal & Telecommunications Engineer, York, North Eastern Region, was educated at the Royal Naval Colleges, Osbourne and Dartmouth. He joined the Great Northern Railway in 1920 and served in the Signal Superintendent's office at Kings Cross and subsequently in the office of the Signal & Telegraph Engineer, Southern Area, L.N.E.R. He was appointed Chief Technical Assistant to the Signal & Telegraph Engineer, Kings Cross, in 1938, and on the formation of the Assistant Chief Engineer's (Signals) office in 1943, was appointed Chief Assistant at Signal & Telegraph headquarters, Kings Cross. In September, 1947, Mr. Wigram became Assistant to Engineer (Signals), Scottish Area, Edinburgh, was appointed Assistant Signal & Telecommunications Engineer, Glasgow, Scottish Region, in January, 1948, and became Assistant Signal & Telecommunications Engineer, Reading, Western Region, in November, 1948.

Mr. A. F. Wigram
Appointed Signal & Telecommunications Engineer, York, N.E. Region

Mr. C. B. Nixon, Chairman, and Mr. D. G. Stokes, General Sales Manager, Leyland Motors Limited, have recently returned to this country after a three-month tour in South America.

Mr. J. M. Kendall, Assistant Chief Civil Engineer, New South Wales Government Railways, who, as recorded in our March 7 issue, has been appointed Deputy Chief Civil Engineer, joined the service in the Way & Works Branch as a cadet draughtsman in 1914 and since then has had wide experience throughout the system on maintenance and construction work. In 1950 the Department sent him overseas to investigate the latest methods for maintenance of tracks and structures and also to study the effect of electric locomotives on the permanent way. On his return, in January, 1951, Mr. Kendall was appointed Assistant Chief Civil Engineer, supervising all construction works.

Mr. G. W. Miller, A.M.I.Loco.E., District Motive Power Superintendent, Skipton, who, as recorded in our January 18 issue, has been appointed District Motive Power Superintendent, Bescot, London Midland Region, was educated at King Edward VII School, Lytham, and at the Horwich Railway Mechanics Institute. He began his railway career with the L.M.S.R. as a premium apprentice at Horwich locomotive works in 1923. After training in various posts he was appointed running shed foreman at Stourton motive power depot in 1933 and became chairman of the locomotive operations analysis committee (Western Division) in 1934. He was appointed running shed foreman at Preston in 1935 and a year later became Assistant District Locomotive Superintendent, Bank Hall. In 1941 Mr. Miller became Assistant District Locomotive Superintendent, Crewe, and two years later was appointed to a post in the Office of the Divisional Superintendent of Operation at Crewe. He was appointed District Motive Power Superintendent, Skipton, in 1947.

Mr. G. W. Miller
Appointed District Motive Power Superintendent, Bescot, London Midland Region

By invitation of the Australian branches of the Institute of Transport, Mr. A. B. B. Valentine, President of the Institute, and Mr. F. W. Crews, the Secretary, are leaving London on March 22 to visit Australia where they will be given opportunities of seeing something of the transport organisation in New South Wales and Victoria and of meeting the members of the New South Wales and Victorian branches. They will travel to and from Australia by air, with short stops at Delhi, Karachi, Singapore and Colombo. The programme in Australia includes inspection of city transport arrangements—road and rail—and port facilities at Melbourne and Sydney, and

Mr. H. F. Jarvis

Appointed Electric Traction Engineer, (Tyneside Area), Gateshead, Nor h Eastern Region

Mr. W. J. Knowling

Works Accountant, Stratford, Eastern Region, 1945-52

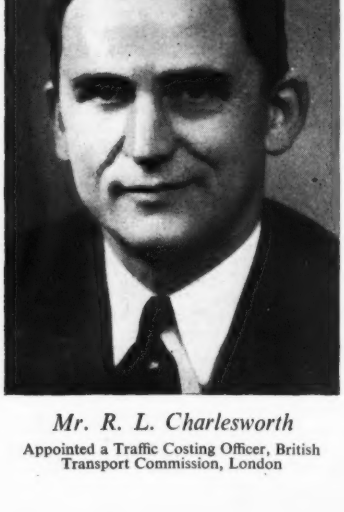
Mr. D. M. Dear

Appointed Assistant Director of Costings, British Transport Commission

there will be official dinners at each of these cities, at which the President will give addresses. There will also be a visit to Queensland. Mr. Valentine and Mr. Crews are due back in London on May 4.

Mr. H. F. Jarvis, A.M.I.E.E., Senior Technical Assistant (Outdoor Machinery), Mechanical & Electrical Engineer's Office, Doncaster, Eastern Region, who, as recorded in our March 7 issue, has been appointed Electric Traction Engineer (Tyneside Area), Gateshead, North Eastern Region, was born and educated at St. Helens, Lancashire, where he served an apprenticeship with Pilkington Bros. Ltd. In 1933 he was appointed as a Senior Assistant Engineer in the Operating Department of the North Eastern Electricity Supply Co. Ltd., and in 1935 he transferred to the L.N.E.R. After a period as Electric Control Engineer at Wallsend he served as Senior Technical Assistant in the North Eastern Region Electrical Engineer's Office at Gateshead, and in 1951 transferred to Doncaster as Senior Technical Assistant in the Electrical & Outdoor Machinery Section of the Mechanical & Electrical Engineer's Department.

Mr. W. J. Knowling, Works Accountant, Stratford, Eastern Region, who, as recorded in our March 7 issue, has retired, entered the service of the Great Eastern Railway in 1901, on the outdoor staff of the Locomotive Accountant at Stratford. He was transferred to the Locomotive Accountant's indoor staff in February, 1904, where he was first engaged on the costing section. In July of the same year he was transferred to the staff & statistical section, where he was employed until his appointment as personal clerk to the Locomotive Accountant in 1912. He served in this capacity under three Locomotive Accountants and, during the period he was engaged on this work, gradually built up the general section as it exists today. He assisted the Works Accountant at the time of the amalgamation in 1923 and again in connection with Standard Revenue in 1924-25. In 1931 he was appointed Chief Wages Clerk and, during the time he held this post, the Wages Office at Stratford was completely reorganised, and payment of wages was undertaken by the Locomotive Accountant at Stratford, which had previously been carried out by the Secretary's staff. In 1937 he was appointed to a special committee to investigate Locomotive Running Department costs, and this occupied his attention until the outbreak of war, when he was recalled and sent to Gidea Park to assist in setting up the dispersed staff dealing with wages at that place. In 1940 he was brought back

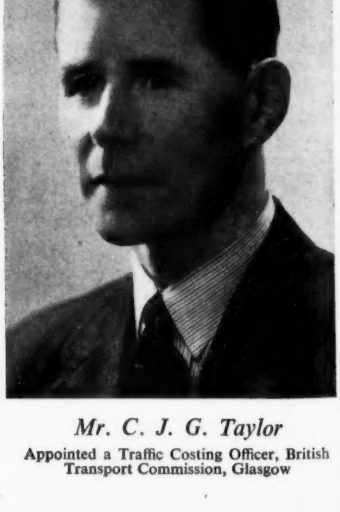


Mr. R. L. Charlesworth

Appointed a Traffic Costing Officer, British Transport Commission, London

Mr. R. A. Long

Appointed a Traffic Costing Officer, British Transport Commission, London



Mr. C. J. G. Taylor

Appointed a Traffic Costing Officer, British Transport Commission, Glasgow

to Stratford to undertake special duties in connection with war damage, munition accounts, and air raid precautions. In 1944 he was appointed Assistant Works Accountant, Stratford, and became Works Accountant in 1945.

Mr. D. M. Dear, who, as recorded in our January 4 issue, has been appointed Assistant Director of Costings, British Transport Commission, was educated at Hurstpierpoint, and joined the L.M.S.R. in 1929 on the personal staff of Mr. W. V. (now Sir William) Wood, who was at that time Controller of Costs & Statistics. He was appointed to the Executive Investigation office on its formation in 1931, and up to 1938 was principally engaged on the investigation of financial results obtained from new works. During this period he also assisted the late Lord Stamp in carrying out a series of statistical studies. In 1938 he was loaned to the Air Ministry to work with the Director General of Production on planning the expansion of aircraft construction to meet war requirements. Shortly after his return to the L.M.S.R. in 1939 he was mobilised and served in the Royal Navy until 1946. On demobilisation, Mr. Dear returned to the L.M.S.R. as a Special Investigator in the Chief Accountant's Department, and in January, 1948, was appointed to the British Transport Commission as Assistant (Statistics) in the office of the Comptroller, where he was responsible for the initial production of *Transport Statistics*. He was appointed Senior Costs Assistant in August, 1948, and has been engaged on the preliminary studies of rail and road costs which have led to the setting up of the Traffic Costing Service. Mr. Dear holds a permanent commission in the Royal Naval Reserve, with the present rank of Lt.-Commander (S).

Mr. R. L. Charlesworth, O.B.E., M.A., A.M.Inst.T., who, as recorded in our January 4 issue, has been appointed a Traffic Costing Officer, British Transport Commission, London, was born at Northampton, and educated at Winchester and Hertford College, Oxford. In 1933 he joined the L.M.S.R. as a traffic apprentice and received four years training. After two years as a runner, he was appointed Acting District Controller, Huddersfield, on the outbreak of war. He was commissioned in the Royal Engineers in January, 1940, and, after serving in France with 153 Railway Operating Company, he spent two-and-a-half years as a Staff Officer in the Middle East, and was mentioned in despatches in connection with the Western Desert Campaign. In 1943 he was appointed D.A.D.Tn. (Railway Operating) at 21 Army Group headquarters, and subsequently served in France, Holland and Germany, being promoted A.D.Tn. in March, 1945. After V.E. Day he was for some time in command of No. 1 Regional Railway Control team at Osnabruck, with the acting rank of Colonel, and was awarded the O.B.E. for services in North-West Europe. On release from the Army Mr. Charlesworth was made Assistant District Goods & Passenger Manager, Bristol, L.M.S.R., and in 1947 was appointed Steamship Superintendent in Belfast, which position he held until his present appointment.

Mr. R. A. Long, who, as recorded in our January 4 issue, has been appointed a Traffic Costing Officer, British Transport Commission, London, joined the L.N.E.R. at Leeds in 1935, and after gaining experience at stations and in district and headquarters commercial offices in the North Eastern Area, completed the training of a traffic apprentice in the Southern Area. After a period on the relief staff as a stationmaster and on special duties, Mr. Long was appointed Assistant to the Manchester District Superintendent in 1942, and in the following year entered the Rates & Statistics Section of the Chief General Manager's office. In 1944 Mr. Long became Head Office Inspector to the Superintendent (Southern Area) and Locomotive Running Superintendent (Western Section), and in 1947 occupied the positions of Deputy Chief of the Trains Section and Chief of the Timetable Section in the office of the Passenger Manager (Southern Area). In 1948 he became Chief of the Central Timing & Engine Diagramming Section, Southern Area (Eastern Section), and in the following year was appointed Trains Assistant to the Operating Superintendent (Eastern Section). He became Assistant (Freight Trains) to the Operating Superintendent, Eastern and North Eastern Regions, in 1950, and vacated this position to take up his present appointment as a Traffic Costing Officer.

Mr. C. J. G. Taylor, who, as recorded in our January 4 issue, has been appointed a Traffic Costing Officer, British Transport Commission, Glasgow, joined the North British Railway at Edinburgh in 1921. After experience in a number of departments in Edinburgh, Mr. Taylor was selected in 1930 for traffic apprenticeship training in the Southern Area, L.N.E.R. Following completion of training, and after a period of cartage work at Norwich and in the Southern Area Cartage Manager's Office, London, Mr. Taylor, between 1934 and 1943 was successively Assistant (Temporary) to the District Goods Manager, Leeds; stationmaster, Laisterdyke; and goods agent, Dewsbury. In 1943 Mr. Taylor went to the Palestine Railways on loan, and for a year served as Officer-in-Charge of the Hedjaz Railway, Transjordan. On returning to the service of the L.N.E.R. in 1945, he was appointed Goods Agent & Yard Master, Sighthill, and two years later, became Assistant to the District Operating Superintendent, Glasgow (Staff & General), an appointment he relinquished to take up duty as Assistant District Traffic Superintendent, Aberdeen, Scottish Region, in December, 1950.

A luncheon was held at the Great Northern Hotel, Kings Cross, on March 7 to mark the retirement of Mr. W. J. Knowling, Works Accountant, Stratford, Eastern Region, and Mr. W. Chambers, Revenue Accountant, Marylebone. Presentations to Mr. Knowling and Mr. Chambers were made by Mr. T. R. Hawkes, Accountant, Eastern and North Eastern Regions.

We regret to record the death on March 5, at the age of 68, of Mr. D. McK. Ford, Vice-President, Purchases & Stores, Canadian National Railways, from 1940 to 1948.

The following appointments have recently been made to the board of Ransome & Marles Bearing Co. Ltd.: Mr. Ernest Belcher, Director & Sales Manager; Mr. J. B. Samson, Director & Works Manager.

Mr. D. J. Batliwalla, Deputy Chief Mechanical Engineer (Workshops), Southern Railway, India, has been invited by the Government of the U.S.A. to visit that country for observation of transport services, railway equipment and production.

We regret to record the death on March 18, at the age of 72, of Mr. W. W. Parish, a Director of the Vulcan Foundry Limited and at one time Chairman of the company.

Mr. George Pettigrew-Smith, Chairman & Managing Director of the Monarch Controller Co. Ltd., has joined the board of A. G. Wild & Co. Ltd.

Mr. H. F. Bibby has been appointed Manager of the American Division of the Metropolitan-Vickers Electrical Export Co. Ltd. in London; he had previously been Manager at The Hague.

We regret to record the death on March 11 of Mr. J. M. Forsyth, who was at one time in charge of imports of steel and pig iron for the British Iron & Steel Corporation. He later became a representative for British manufacturers of special tools.

Brigadier A. E. M. Walter, of the Ministry of Transport, and Mr. C. E. R. Sherrington, Director of the Research Information Division, British Transport Commission, left this country in ss. *America* on March 11, as members of an Organisation for European Economic Co-operation mission to the U.S.A. The mission, of which Brigadier Walter is Chairman, will study the working of the Inter-state Commerce Commission. It is expected that Brigadier Walter and Mr. Sherrington will return to London towards the end of April.

Ports Efficiency Committee

The Secretary of State for the Co-ordination of Transport, Fuel & Power, has announced that invitations to serve on the Ports Efficiency Committee, which is charged with the task of speeding the flow of traffic through United Kingdom ports, have been accepted by the following:—

Lord Llewellin, Chairman.

Sir Ernest Murrant, Chairman of Furness Withy & Co. Ltd.

Mr. F. A. Pope, a Member of the British Transport Commission.

Sir Douglas Ritchie, Vice-Chairman of the Port of London Authority.

Major Roland Thornton, Deputy Chairman of the Mersey Docks & Harbour Board.

Mr. Tom Yates, General Secretary of the National Union of Seamen.

The Secretary is Mr. S. R. Walton, of the Ministry of Transport.

We regret to record the death on March 6, at the age of 85, of Mr. J. H. Bailey, A.M.I.C.E., who retired from the position of Assistant (Construction) to the Civil Engineer, L.N.E.R., in April, 1931. He joined the staff of the Lancashire & Yorkshire Railway and was employed as Assistant to the Resident Engineer on the construction of Horwich Locomotive Works and the Liverpool Exchange Station rebuilding. He went to the Great Northern Railway in 1892 and played a prominent part in the design and construction of new works subsequently carried out by that company. Mr. Bailey was Resident Engineer for the line widenings carried out by the G.N.R. on the Luton and Cambridge branches and at Finsbury Park. In 1914 he was appointed Senior Assistant in the Construction Department and he took up the position of Chief Drawing Office Assistant in the Civil Engineer's Department, L.N.E.R., at the Grouping. He later became Assistant (Construction) to the Civil Engineer and retired in 1931. Cremation was at Woking on Monday, March 10.

Achievements and Objectives of British Railways

Steady success in spite of capital restriction hindering development plans

Mr. John Elliot, Chairman of the Railway Executive, addressing the Rotary Club of London at a luncheon on March 12, said that British Railways had won the winter freight battle. With fewer wagons and fewer locomotives in stock than in 1948, and with a reduced staff, they nevertheless carried more traffic this winter than in any winter since unification, while the distance each ton of freight had been hauled was the highest on record.

For the past four years, British Railways had been undergoing great internal changes in consequence of the Transport Act, while at the same time facing rocketing costs, shortages of essential staff in many parts of the country, and severe restriction of capital investment. Railways were such large users of materials of every kind that any rise in costs bore very heavily upon them. For example, at the end of 1951, the price of timber sleepers—of which they used about 3½ millions a year—was 6½ times what it was before the war; steel rails cost 2¾ times as much, copper plates 3½ times as much, coal three times as much, and so on. Their wage bill alone had gone up by £30½ millions in the last 12 months.

Increases in railway charges would still leave these at a much lower level than the increases in most of the commodities which British Railways had to buy to provide the service, and they had to pay on the nail like any other business; but their prices to the public lagged far behind while they argued their case before the Transport Tribunal.

By many standards British Railways were achieving steady success, Mr. Elliot continued. In spite of a reduction in train services in 1951, more passengers were carried last year than in any year since British Railways took over (average 3 million people a day).

Heavier Winter Freight Movement

With freight, too, more traffic had been carried by rail this winter than in any winter since 1948—and the distance each ton had been hauled was higher than in any pre-war year; 76 miles last year, against 57 in 1937 (in war-time it was 79 miles). In fact, British Railways had done more work—taking into account both tonnage and distance—than ever before in peacetime.

This increased traffic movement had been accomplished with a smaller stock of locomotives and 100,000 fewer wagons than in 1948, thanks to better use of railway resources under unification, such as a substantial reduction of the numbers out of service for repair. The staff also had been reduced, by about 50,000. Apart from a period last October, when there were 20 successive nights of fog, freight traffic this winter had been conveyed without any real restriction. The number of wagons held in marshalling yards and at exchange points had been at or below normal.

While it was satisfactory that so much better a position obtained in the movement of freight, Mr. Elliot went on, the railways could not be complacent, because they had not catered for passenger traffic as they would like, nor were they building for the future as any progressive industry should be able to do under normal conditions. The railways were so affected by the reduced allocation of steel, for instance, that it was probable they would be able to meet their normal construction programme for 1952 in respect of only 65 per cent. of freight vehicles; the locomotive programme was likely to be cut by half, while it was unlikely that a single new passenger coach of the 1952 programme could be built. They hoped, however, to complete the carry-overs of the last two years with the steel they had on hand. This meant they would have to go on with a fleet of coaches which, while reasonably adequate in number, contained too high a proportion of vehicles which were not only obsolete but also were wholly uneconomical in repairs. What passengers sometimes described as "dirty" carriages were often merely "old," with faded upholstery and worn fittings. As a matter of fact, said Mr. Elliot, British Railways trains today were generally clean inside and out.

As regards the track they would have enough steel to carry out most—but not all—of their full renewal programme of 1,750 miles. The limiting factor here was not so much shortage of material as of labour; they were 7,000 permanent way workers short, notwithstanding recruitment of Italian labour and progressive introduction of mechanised appliances. If things were no better in 1953, they would have to impose more speed restrictions. This was today a major factor in preventing more trains being accelerated.

Economies by Unification

After four years, British Railways were reflecting the value of economies in organisation and working made possible by unification. Examples of this were twelve standard types of locomotives instead of about 400; all-steel coaches with shock resistance greater by 100 per cent.; drastic reduction in number of types of wagons; and new standard units and fittings enabling best advantage to be taken of workshop capacity. The works were now concentrating on particular parts, *e.g.*, cylinders for locomotives being built at Swindon, Derby, and Brighton were cast in one railway foundry, while water and pressure gauges for all standard locomotives were made in one works.

New standard, heavier flat bottom track would cost less in maintenance. The number of components a mile was less, and life was greater. British Railways led the way in mechanisation of track renewals and day-to-day maintenance.

Apart from current programmes, said Mr. Elliot, many major development schemes on British Railways were held up seriously because of the capital investment position, or were going on far too slowly. The more rapid introduction of diesel units for shunting; the much-needed electrification of the Fenchurch Street-Southend line; the completion of the Southern Region electrification in Surrey, Kent and Sussex; and the opening up of the tunnels and widening of the line between New Barnet and Potters Bar on the Kings Cross route, were among many important projects either approved, or which merited urgent consideration.

The American railways in 1951 expended in capital investment the record sum of $1,413 million, or £504½ millions. In the same year on British Railways £72 millions only was authorised for such expenditure.

British Railways must, of course, contribute to the national call for economy, but this could not be achieved without a corresponding effect upon the physical assets of the railways. This in turn affected the standard of service which the railways could render.

Fine Effort by Staff

Referring to the "fine effort" of the railway staff, many of whom had given up their rest days for weeks on end during the present winter in order to see the traffic through, Mr. Elliot said that not least of the problems presented by the creation of so large an organisation as British Railways was that of building up loyalty and morale—fortunately a tradition inherited from the old railway companies—so essential to the efficient running of a great public service.

Although new machinery of consultation had been evolved, and although closer direct contacts with staff were being sought in many ways, new problems had been created; not least of these was that of telling the staff what was going on, and why.

The problem was accentuated by the widespread, dispersed, and non-static character of railway work. The problem was essentially a human one which could and would be solved by goodwill and endeavour on all sides, Mr. Elliot continued.

Mr. Elliot said he was the last to pretend that British Railways were anywhere near perfect or above criticism, but he claimed that in a post-war period unsurpassed for shortages of capital, men and materials, with a transformation of ownership bringing entirely new problems of organisation, management and approach to labour relations, they had laid a sound foundation for railway practice and technique; this would bring its rewards in greater efficiency as the years went on. They were neither angels nor magicians. They were railwaymen who had given most of their lives to this business, and he was confident that when capital investment was free from restriction, when shortages were things of the past, the nation would have every reason to be proud of its British Railways.

In that belief, Mr. Elliot concluded, they worked on with three objectives before them: good service to the public; good conditions and a happy life for those who worked on the railways; and to pay their way. They would not be satisfied with less.

MAVITTA DRAFTING MACHINES LIMITED EXHIBITS AT B.I.F.—Mavitta Drafting Machines Limited will exhibit at the British Industries Fair a complete range of drafting machines to fit boards of all sizes, mounted on adjustable drawing stands, and the firm's adjustable set square and mathematical scales. The display will include a machine designed primarily for the production of full-scale drawings. It consists of a travelling drafting head counter-balanced for easy vertical movement, and can be supplied to cover boards up to 50 ft. in length.

Demonstration of Signalling Equipment

Working model of S.G.E. centralised traffic control system

Signal engineers of the Railway Executive, the individual Regions of British Railways, the London Transport Executive, and railways in other countries visited the headquarters of the Siemens and General Electric Railway Signal Co. Ltd. at Wembley on March 13 to inspect examples of railway and road traffic signalling apparatus in the company's demonstration room. The engineers attending the demonstrations were:—

Mr. J. H. Fraser, Chief Officer for Signalling, Railway Executive, and the following Signal & Telecommunications Engineers of British Railways: Messrs. L. J. Boucher, Southern Region; W. Bryson, Scottish Region; A. Moss, Eastern Region; A. F. Wigram, North Eastern Region; S. Williams, London Midland Region.

Messrs. R. Dell, Signal Engineer, London Transport Executive; H. J. Guthrie, Signal & Electrical Engineer, Coras Iompair Eireann; G. I. Hewitt, Deputy Chief Operating Superintendent (Telecommunications), East Indian Railway; C. H. Griffiths (Messrs. Rendel, Palmer & Tritton).

Mr. J. H. Fraser, Chief Officer for Signalling, Railway Executive; Mr. A. Moss, Signal & Telecommunications Engineer, Eastern Region; Mr. D. R. Lamb, Editor, *Modern Transport*; and Mr. S. Williams, Signal & Telecommunications Engineer, London Midland Region, and President of the Institution of Railway Signal Engineers, replied to Mr. Castle's speech. Mr. Moss reported that the fully automatic train describer equipment supplied by the Siemens and General Electric Railway Signal Co. Ltd. had been brought into use between Liverpool Street and Romford a fortnight ago and was working remarkably well. It was an outstanding installation.

In the demonstration room, the operation of the C.T.C. equipment was illustrated by means of a model layout consisting of three crossing stations and two intermediate sections of single line. Only two line wires are required, control being effected by a coded impulse system using standard Post Office relays. Field station relay units operate at 24 volts and have detachable tops with the appropriate connections made permanently by straps between the terminals, so that no rewiring is required when a unit is replaced. A similar jacking-in arrangement facilitates replacement of the relays in the main control panel, for which the supply is at 50 volts.

To control signals, points or other functions, keys on the control panels are manipulated and a "start" button is pressed, causing two trains of impulses to be sent out. The first train selects the outstation and the second the equipment to be controlled. Impulsing is indicated by a flashing light on the panel. About 4½ sec. elapses between pressing the button and the operation being completed, and a further 4½ sec. is occupied by transmission from the site to the panel of the return indications. A feature of the apparatus is that when clearing a starting signal to a single-line section, a two-station code is transmitted so as to connect the track battery at the remote end and the track relay at the near end, thus proving the line clear and opposing signals at "stop."

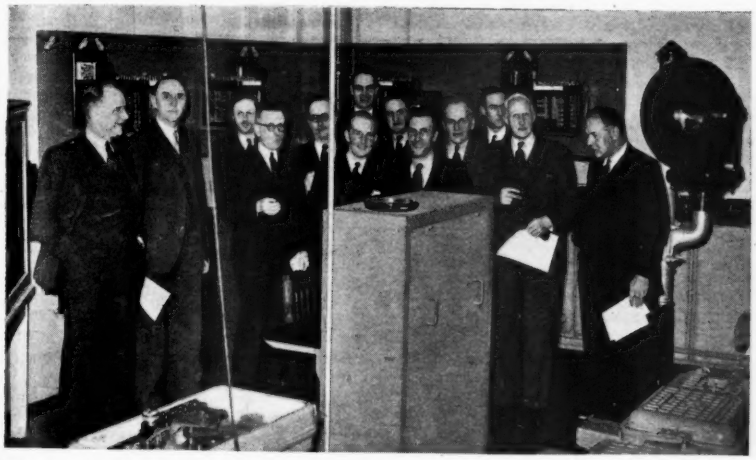
The system may be used for remote control of power-operated points, but in the Rhodesia Railways installation, the first section of which is now working, points are worked by hand by the train crews after a release has been operated and a special signal has been displayed. This is the first C.T.C. installation on the African continent. It will extend eventually from Heany Junction, near Bulawayo, to Gwelo on the Salisbury main line.

A development in the similar C.T.C. equipment now being supplied to New Zealand is the use of separate and interchangeable track diagram and key sections on the control panel, so that when changes of layout and signalling occur the new sections can be prepared beforehand and plugged in when the changeover is completed. Equipment for the Stillwater-Greymouth branch is now being installed, and that for the Bluff-Invercargill-Makarewa section is in course of manufacture at the present time.

Other equipment inspected in the demonstration room included relay interlocking panels, all-electric power frames, point machines and hand generators, train describer equipment, multiple-aspect and searchlight colour-light signals, road traffic signals, and the Autoflex detector for road signalling.

In the accompanying illustration are shown:—

Left to right: Messrs. F. L. Castle, R. Dell, B. K. Cooper, W. Bryson, D. R. Lamb, J. H. Fraser (at back), H. J. Guthrie, S. Williams, L. J. Boucher, C. H. Griffiths, A. F. Wigram, A. Moss, G. I. Hewitt.



The party in the S.G.E. demonstration room inspecting C.T.C. apparatus of the type supplied to the Rhodesia Railways

S.G.E. staff: Messrs. T. Austin, Chief Engineer; F. Edwards, Commercial Manager; H. J. N. Riddle, Design and Development Engineer; J. Sulston, Signal Engineer; J. E. Mott, Commercial Engineer; L. W. H. Lowther, Sales Engineer; F. Horler, Engineer; F. J. Mitchell, Assistant Commercial Manager.

Mr. F. L. Castle, Director and General Manager, the Siemens and General Electric Railway Signal Co. Ltd., welcomed the guests at a luncheon before the demonstrations. Mentioning some of the items they would see, he drew special attention to the C.T.C. apparatus of the type now working on the Rhodesia Railways. Similar installations were going forward on the New Zealand Government Railways, one set of equipment having arrived there already while another would be on the way soon.

They would also see demonstrations of relay interlocking, a technique in which the company had been early in the field in the North Eastern Area of the former L.N.E.R. He did not think that finality had been reached in relay interlocking methods and suggestions from their visitors might make valuable contributions to further development.

Isle of Man Railway Company

The ordinary general meeting of the Isle of Man Railway Company was held in Douglas on March 5, Mr. R. Q. Hampton, Chairman, presiding.

The Chairman said that the past summer was not nearly so good as the previous year in transport requirements. They were down considerably in volume and receipts.

The largest and most crushing burden was the continuous rise in wage rates. Further substantial advances in 1951 made it exceedingly difficult to work at a profit, and consequently there had been no possibility of placing any sum to renewal or reserve. Approximately two-thirds of gross receipts were taken by wages. Any surplus over enlarged working expenses had to be earned in the short summer season.

Winter traffic had run at a loss, notwithstanding improvements and amenities added since the war to induce a larger number to travel by rail. In the absence of a response to their efforts they had economised by reducing the service and train mileage run.

The system itself, permanent way, coaching and all other plant and stock, had been efficiently maintained with all necessary painting, reconditioning and replacement. They were in better condition now to handle traffic than they had ever been, and the line offered a standard of comfort not previously surpassed; but the fares chargeable were still unchanged. Were it possible to increase them, it was questionable whether it would provide a solution. The transitional period between old values and new made the gap wider yearly, and although they had offset it by all possible retrenchment, they needed still a progressive increase in summer receipts to enable them to keep pace with it. He was glad to hear from authoritative sources

that this year already showed promise of a much better tourist traffic.

Coal had recently advanced in price again, as had almost all essential materials needed. They had carried over a million passengers. Parcels, livestock and goods traffic was up in volume and receipts, and they had not incurred special or extra-ordinary expenditure, with the result that reserves and investments were almost unchanged.

It had to be kept in mind that the company, with its subsidiary, Isle of Man Road Services Limited, performed an invaluable service in handling during the peak of summer a traffic that neither could handle alone without confusion, delay and loss.

At former annual meetings the need of this merged control had been stressed. Through it the island had a transport system equal to that of any similar resort in Great Britain.

Gross receipts from all sources were less than those of the previous year by £3,769. Expenditure was down by £355. After addition of net receipts of £2,619 brought forward and £6,687 representing interest on investments, there was a total of £16,037. After deduction of debenture interest, rent charges and general interest a disposable balance of £8,761 remained.

It was proposed to pay a dividend on the preference shares at 5 per cent., taking £2,500, and one of 2½ per cent. on the ordinary shares, taking £3,500, leaving £2,761 to be carried forward.

In reply to a shareholder, the Chairman said that it was impracticable to close the railway in the winter, as had been suggested, because of both staff considerations and considerable goods traffic in the winter.

Opening of South-West Divisional Medical Centre, London Transport

Decentralisation of Executive's medical service completed

The South-West Divisional Medical Centre of London Transport at Chiswick Works was opened on March 12 by Mr. John Cliff, Deputy Chairman, London Transport Executive, supported by Lord Horder, Consulting Medical Adviser to the Executive. The ceremony was held under the presidency of Lord Latham, Chairman, London Transport Executive. Among the guests present at the ceremony were Sir Stewart Duke-Elder, Consulting Ophthalmologist to the Executive, Members of the Executive, officers and staff of London Transport, and representatives of trades unions.

Shortly after the beginning of the war the medical department of the London Passenger Transport Board came under the control of Mr. Cliff, who determined that, in addition to being efficient, the medical service provided should be accepted by the staff as a friendly and helpful service. As a result of consultations with Lord Horder, it was realised that, to achieve such a service, it was essential to create a closer relationship between doctors and staff; decentralisation was therefore necessary. In 1946 it was decided to go ahead with the policy of decentralising the medical service, which was then operated from the Board's offices in Griffith House, Marylebone Road. The opening of the Chiswick Centre marks the completion of the scheme.

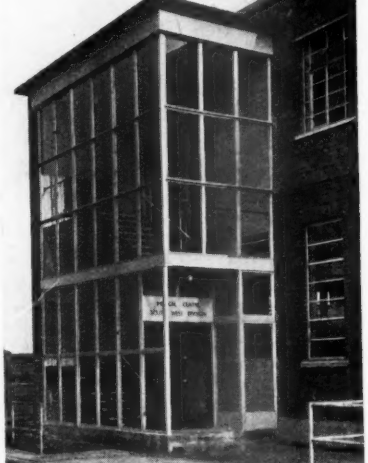
Medical Service Administration

The London Transport medical service is now administered through four centres, under the general direction of the Chief Medical Officer of the Executive from a headquarters at Griffith House, which also serves as the medical centre for the North-West division. The other three are the North-East Divisional Centre (at the Manor House offices, Finsbury Park), opened in February, 1949, the South-East Divisional Centre (at Peckham Garage), opened in May, 1951, and the new South-West Divisional Centre at Chiswick Works. Each centre has two medical officers and covers approximately a quarter of the area served by London Transport, so catering for some 23,000 staff, except the headquarters centre, which serves almost 30,000.

London Transport has thus developed a modern industrial health service, designed to cater for two main branches of work, one —the clinical—consisting of routine medical examinations for recruitment, promotion, and other purposes; the other—the environmental—consisting of the supervision of working conditions, from the aspect of hygiene, in all places of work and canteens. Each branch is under the control of a Senior Medical Officer stationed at the headquarters centre. In addition, there is also an extensive first aid organisation which includes some 1,200 members of the London Transport Ambulance Centre.

Many advantages are already evident from the policy of decentralisation. The individual medical officers have become personally known in the smaller areas for which they are responsible. Closer contact has been established with local managements of the main employing departments, union officials, and staff representatives.

Travelling time taken by an employee to go from his place of work to the medical centre has been considerably reduced, and the smaller numbers attending mean a shorter wait for the employee. Also, if he should have to attend more than once, he usually sees the same doctor on each occasion. The new centres have been set up with full regard to the need for austerity and economy. At Manor House, for example, existing accommodation was used, and at Peckham the centre was incorporated in a new garage.



Entrance to the Medical Centre at Chiswick Works

Its layout provides light and airy rooms finished in pastel colours; as at Peckham, full use has been made of contrasting tones for the different walls of the consulting rooms. To relieve the reception room of the usual waiting room atmosphere, the architects have put in a dwarf partition surmounted by climbing plants instead of one party wall.

Besides the consulting rooms and reception room, the accommodation, which is similar at all four centres, includes a laboratory, X-ray room, clerical office and records room, and an eyesight-testing room which is a dark room fitted with the latest electrical and mechanical sight-testing appliances.

Although occupying only a part of the new floor above the existing recruitment and training centre, the centre at Chiswick has been made self-contained by the provision of a separate glass-enclosed entrance staircase of modern design. Emphasis throughout has been on freedom from dust-collecting ledges, corners and skirtings. The walls are painted, the floor is of warm red composition tiles, and all inside sills are finished in primrose glazed tiling. Large metal casement windows, with double windows for sound-proofing the consulting rooms, provide adequate natural lighting. Steam-heating, used in conjunction with extractor fans, ensures a steady supply of clean warmed air.

The centre will be in the charge of Dr. M. Williams, assisted by Dr. G. C. Acres.

Staff & Labour Matters

Engineering Apprentices' Wages

Some 13,000 Scottish engineering apprentices have announced a decision to strike to enforce their claim lodged with the Employers Federation on February 14 for an increase of £1 a week; they are supported in their action by 800 Metropolitan-Vickers apprentices.

So far only small numbers of apprentices have come out on strike sporadically, on Clydeside and elsewhere.

Proposals for improving the rates of pay of youths and apprentices employed in Railway Executive workshops were rejected by the Confederation of Shipbuilding & Engineering Unions after a meeting of the Railway Shopmen's National Council last December. The claim subsequently went forward to the Industrial Court along with that for Railway Shopmen generally, and the decision of the court is awaited.

Shipbuilding Wage Claim

The C.S.E.U. submitted on March 6 a claim for a wage increase of £1 a week for all apprentices, boys, and youths. The claim was made to the Shipbuilding Employers' Federation, which stated that it would give the matter consideration and reply soon. About 20,000 employees are concerned.

Parliamentary Notes

Transport Charges

In the House of Commons on March 13, Mr. Ernest Davies (East Enfield—Lab.) moved that an humble Address be presented to Her Majesty, praying that the Railways (Additional Charges) (Amendment) (No. 2) Regulations, 1951, dated December 13, 1951 (which authorised the increases in freight rates from December 31) be annulled. He criticised the haste in which the newly-appointed Minister, Mr. J. S. Maclay, had acted in referring the matter to the Permanent Members of the Transport Tribunal, which body, he said, already had been occupied with the Passenger Charges Scheme, 1951. In addition, the B.T.C. had been preparing a freight charges scheme, which would have meant further increases in rates. The Minister should have waited for the freight charges scheme. Then they would have had one single measure dealing with the situation, rather than such frequent bites at this cherry. Passenger fares and freight rates, he added, should be considered together. Another reason adduced by Mr. Davies for not raising freight rates was the heavy traffic resulting from the mildness of the winter. After referring to the poor condition in which the railways had been taken over after the strenuous war years and, in certain sections, their poor state after pre-war operation under private enterprise, Mr. Davies urged review of the capital investment programme of the railways, and a fairer allocation to them of steel and of other materials. There was, he said, a particular need of diesel shunting engines to facilitate more economic operation; this would prevent further burdens being imposed upon the travelling public and on consigners.

Co-ordination of Transport

A further explanation of the financial difficulties of British Railways, Mr. Davies continued, was that there had not been speedy integration or co-ordination of the different activities of the Commission and between road and rail. It had not gone as fast as was hoped in the first days of nationalisation. Another reason was the large amount of traffic lost by the railways to private road hauliers. That had been due partly to the "C" licence holders carrying their own goods and also to the evasion of the Transport Act whereby goods were being carried by road "pirates"; there was, for instance, the shipper of his own goods owning a "C" licence without owning a vehicle who could hire a vehicle from a contractor operating under the shipper's "C" licence. The Minister should look into this question.

Passenger Fares

Mr. Davies thought that B.T.C. finances would be much helped if passenger fares were kept lower and if more cheap fares were introduced, rather than by allowing passenger fares as well as freight charges to go up periodically as they were doing now. Before rates or fares were raised any further, there should be serious consideration of the financial structure of the B.T.C. The Minister should also see what could be done to eliminate the annual deficits, whether there was not some financial reconstruction necessary to relieve the Commission of some of the burden of capital charges.

Mr. Frank Beswick (Uxbridge—Lab.), who seconded the motion, asked if the increase of £11 million which the B.T.C. said it would incur in this calendar year included an estimate for increased steel and coal prices, which, in turn, had been necessitated in part by the increase in freight charges.

Railway Salaries

The Minister, added Mr. Beswick, had said that the nationalised transport system was in need of improved capital equipment. It was not merely in the sphere of physical equipment that the transport industry, and the railways specially, were behind the times. It was the same for personnel. *The Railway Gazette* of January 18 had drawn attention to the fact that out of one million people employed in the transport industry fewer than 100 earned £3,500 a year or more. He believed it was also true that out of the one million people employed fewer than 2,000 earned £1,000 a year or more. He did not believe there was another industry in the country in which the proportion of highly skilled and highly paid men could be so small.

Mr. Michael Foot (Devonport—Lab.), said that the Budget would probably cause railway wage demands which would lead to future freight rate increases. One way in which they could avoid having a series of debates on increased freight charges and passenger fares was investing more money in the railways; they wanted to know whether this new investment cut of the Government did affect the railway system.

Reasons for Increased Charges

The Minister of Transport, Mr. J. S. Maclay, said that he had inherited a Transport Commission which was losing £750,000 a week. That had to be dealt with straightaway. It was not necessarily the fault of the Opposition, because of big increases in wages and prices in 1951. The Labour Government should have done more to check the inflationary spiral. The present Government was faced with an industry caught in the spiral, which the Opposition apparently completely failed to get under control in those six years. The measures which the present Government would take in relation to the railways and transport generally were under close and urgent consideration, which should be given to many things before they were done instead of rushing in, with the results which they had seen in some cases.

Mr. Maclay said that the position left to him on taking office was that there seemed to be no visible date on which the Passenger Charges Scheme 1951, might be concluded. He had had to authorise the increase in freight charges because of the drain on B.T.C. resources. The Government was convinced that great economies could be made in the whole transport of the country, but he had no intention of stating them yet.

Capital Investment Programme

A capital investment programme, Mr. Maclay stated, was necessary for the railways, but priorities must be observed at a time of desperate shortage. He was satisfied that the railways got their full and proper share of the available funds for capital investment. The Government would deal with every situation as it found it. The freight rate increases at the New Year were essential. If the Opposition divided against them, they would be striking at their own creation. They would be condemning it to heavy loss, and would be merely carrying greater responsibility for something for which he did not think they had any great reason to be proud.

In the course of further discussion, Mr. A. J. Champion (South East Derbyshire—Lab.), said that something had been done by the Chancellor of the Exchequer which would have serious repercussions on the whole of the 100,000 railwaymen who were in receipt of less than £6 a week. It would mean that the Minister of Transport would shortly be coming to the House again to cover the increase in cost which must result from the rise in wages, a consequence of the Budget. The Budget was a disaster to the lower paid transport workers.

Mr. Geoffrey Bing (Hornchurch—Lab.), suggested that freight charges might be raised, to take some weight off the man with the season ticket; some of his constituents were paying almost twice as much as before.

The motion was negatived.

Questions in Parliament

Passenger Charges Scheme

Mr. Ernest Davies (East Enfield—Lab.) on March 17 asked the Minister of Transport if he would request the Central Transport Consultative Committee to consider the manner in which the B.T.C. proposed to exercise the discretion allowed by the passenger charges scheme in relation to railways outside London in view of its declared intention to increase railway fares thereon on May 1. He pointed out that much of the dissatisfaction in London at the manner in which this increase in fares was implemented was because the rise synchronised with changes in fare stages. He asked the Minister to see that when the increase took place outside London, steps would be taken to prevent a similar occurrence.

Mr. J. S. Maclay: Mr. Davies must realise that I am working under the 1947 Act.

Mr. Davies: The Minister has full power to ask for information from the B.T.C. Will he not use it to ask the Commission how it proposes to implement the increase on May 1?

Mr. Maclay: That point was not put precisely in Mr. Davies' question.

Mr. Davies: The Minister says he has no power.

Railway Workshops and Rearmament

Major S. F. Markham (Buckingham—C.), on March 17 asked the Minister of Transport, if he would make a statement as to the directions he would give the B.T.C., in view of the national emergency, to permit railway carriage works to assist in the rearmament drive.

Mr. J. S. Maclay wrote in reply: As in the late war, the capacity of railway workshops will be used for rearmament work where it is suitable and where it is necessary to supplement existing industrial capacity. The B.T.C. would undertake such work by a Direction issued under Defence Regulation 55 (2A).

Freight Charges

Mr. Frank Beswick (Uxbridge—Lab.) on March 3 asked the Minister of Transport, in view of the fact that recent increases in freight charges were due in part to increases in the price of coal which in turn resulted, in part, from earlier increases in freight charges, what steps he proposed to take to ensure that the latest increases in coal prices did not lead to further increases of freight charges.

Mr. J. S. Maclay (Minister of Transport) in a written reply stated: I have not received any application from the B.T.C. for a further increase in railway freight

charges on this ground and I am informed that no such application is in contemplation.

Future of Canal System

Viscount St. Davids in the House of Lords on March 12 asked if it was the policy of the Government to abandon the canal system of Britain or sell it to local authorities and to transfer its goods traffic to the railways.

Lord Leathers, Secretary of State for the Co-ordination of Transport, Fuel & Power, replied that some 2,000 of the 2,600 miles of canals and navigable rivers were transferred to the B.T.C. by the Transport Act. They carried about 12,000,000 tons of commercial traffic a year, about half of which was coal. About one-third of the total canal mileage transferred to the Commission was little used or derelict, and the B.T.C. was satisfied that it was no longer needed for transport. Some canals might be abandoned entirely and others turned over to non-navigational uses.

Contracts & Tenders

The Railway Executive has placed a contract with the Tees-side Bridge & Engineering Works Limited for 25 42-ton trestle plate wagons.

A contract valued at £100,000 has recently been placed with the Butterley Co. Ltd. by the Tasmania Government Railways for 140 underframes and bogies for standard wagons.

For the change of frequency scheme to be carried out by the Southern Region of British Railways, the British Electric Transformer Co. Ltd. has received an order for two 45 MVA, 3-phase, 50-cycles, 66/33 kV., star/delta connected, ON/OFB, outdoor type transformers with fully automatic on-load tap-changing equipment. The company will also supply two earthing transformers for use with the main transformers.

A recent report from the Board of Trade, Special Register Information Service, states that the Central Railway of Uruguay has issued a call for tenders (C.M. 186) for the supply of the following automatic vacuum brake equipment:—

150 piston rods for automatic vacuum brakes
400 universal steel couplings for automatic brake hose
36 T siphons for automatic vacuum brake hoses

Tenders should reach the Administracion del Ferrocarril Central del Uruguay, Ciudad, Uruguay, before 3 p.m. on April 17. A copy of the tender documents in Spanish and drawings is available for inspection by United Kingdom manufacturers at the Board of Trade, Commercial Relations & Exports Department (Room 6172). Reference CRE/8172/52 should be quoted.

LEOPOLDINA TERMINAL COMPANY SCHEME.—The Leopoldina Terminal Company announces that the scheme of arrangement with its debenture holders and ordinary stockholders relating to the sale of its shares in the Companhia Cantareira e Viaçao Fluminense was sanctioned by the Court on February 25, but as it had not been possible to complete all the legal formalities and the definitive sale agreement by March 5 it has been agreed with the purchasers that the period within which this can be done shall be prorogued for 30 days.

Notes and News

Floods Threaten Kafue Bridge.—Floods threaten to wash away the 1,500-ft. long road and railway bridge across the Kafue River, Northern Rhodesia.

Indian State Railways Dinner.—We are asked to remind those interested that the Indian State Railways Dinner will be held as usual on the Monday in Derby Week, May 26. Further details will be announced later.

Vacancies for Civil Engineers (Railway).—Applications are invited for the posts of district engineer and assistant district engineer required by a British railway company operating in Chile and Bolivia. See Official Notices on page 335.

New London Offices of B.E.T.—The Headquarters Organisation of the British Electric Traction Co. Ltd. and The B.E.T. Federation Limited was transferred on March 17 from 88, Kingsway, to Stratton House, Piccadilly, London, W.1. The new telephone number and telegraphic address are Mayfair 8886.

British Omnibus Companies Press Office.—As from March 17 the address of the Public Relations Committee of the British Omnibus Companies has been changed to Stratton House, Piccadilly, London, W.1 (Telephone: Mayfair 8886), where Press inquiries are now dealt with by the Press Officer, Mr. Alban Ford.

British Railways Coal, Iron and Steel Carryings.—During the 48 hr. ended 6 a.m. on March 17, British Railways cleared 416,600 tons of coal from deep-mined pits and open-cast sites, bringing the total for the week up to 3,245,800 tons, the heaviest this year. Iron and steel conveyed from the principal steel works during the week ended March 8 amounted to 202,947 tons.

Institution of Locomotive Engineers.—An informal meeting of the Institution of Locomotive Engineers will be held on April 3 at 5.30 p.m., at the Institution of Mechanical Engineers, Storey's Gate, S.W.1. There will be an informal discussion on "Passenger Comfort in Modern Coaching Stock." The meeting, which was originally arranged for February 6, was postponed on account of the death of His late Majesty King George VI.

Transmission Gears at the B.I.F.—A hypoid type axle drive unit of the type supplied for Rotterdam trams will be shown by David Brown & Sons (Huddersfield) Limited at the Castle Bromwich section of the British Industries Fair. This unit is similar to, although slightly smaller than, the axle drives which the company will supply for the rolling stock of the Toronto Transport Commission's underground railway. Also on the stand will be examples of Radicon worm reducers, gear type flexible couplings, and rear axle gears of various kinds. Other companies within the David Brown Gear Group will be represented, and among their exhibits will be gear-cutting tools of all types and gear-measuring instruments. The Coventry Gear Company will show geared motors of the double- and triple-reduction types. Exhibits from the current production of the David Brown Foundries Company will include a half turbine case steel casting weighing seven tons for use in connection with a 60,000-kW. turbo-alternator. David Brown Tractors Limited will show a fully sectionalised industrial diesel engine on the company's stand, and on the stand of Blaw Knox Limited will exhibit two David Brown tracklayers fitted with earth moving equipment.

Institution of Railway Signal Engineers.—The Annual General Meeting of the Institution of Railway Signal Engineers will be held at the Institution of Electrical Engineers, Savoy Place, W.C.2, at 6 p.m. on April 2.

Institute of Transport, Metropolitan Section.—At a meeting of the Institute of Transport, Metropolitan Section, to be held at 5.30 p.m. for 6 p.m. on April 7, at 80, Portland Place, W.1, Mr. Michael Robbins will read a paper on "Administration in Transport."

Presentation to Mr. W. A. Agnew.—In an article on the Institution of Locomotive Engineers annual luncheon on March 7, which appeared in our March 14 issue, it was stated that Mr. C. M. Cock, then President-Elect of the Institution, had presented a bronze medal for meritorious service, to Mr. W. A. Agnew, a Past-President. The medal was, in fact, presented by Mr. Julian S. Tritton, President of the Institution for 1951-52.

Road Operators' Approach to Chancellor.—The Council of the Public Transport Association Incorporated, at a meeting in London on March 13, agreed unanimously that an approach should be made to the Chancellor of the Exchequer asking him to receive a representative deputation of operators. The deputation would explain "the gravity of the incidence on the country's passenger road transport of his proposals to increase the already excessive tax on fuel by a further 7½d. a gallon."

New Birmingham Premises for Ransome & Marles Bearing Co. Ltd.—New offices at 291-295 Corporation Street, Birmingham, were opened recently by the Ransome & Marles Bearing Co. Ltd. of Newark-on-Trent. At present the offices are in a single-storey building, but the plans provide for their eventual extension to four floors, and this will be carried out as soon as the present building restrictions have been relaxed. Mr. J. C. Bayley continues as the company's Midlands Area Manager at the new address.

Improving Production with Portable Tools.—Wolf Electric Tools Limited has produced a coloured film strip and commentary showing ways in which operators of portable tools can speed up output with benefit to themselves and to the nation. The film strip will be shown in industrial centres throughout the United Kingdom. Wolf representatives in all parts of the country will be available to provide the lectures and give the benefit of their specialised knowledge of portable electric tools to individual operators and others who may be interested.

Western Region Music and Drama Festival.—Nearly 2,000 members of the staff of British Railways, Western Region, and their families, are taking part in the 22nd Annual Festival of Music and Drama, organised by the Western Region Staff Association, which opened at Reading on March 17. Competitions range from classes for mixed choirs to vocal soloists, brass bands and orchestras to instrumental soloists, and from one-act plays to individual public speaking competitions. Councillor T. W. Knight, Mayor of Reading, extended a civic welcome to the festival at the opening of the evening

OFFICIAL NOTICES

The engagement of persons answering Situations Vacant advertisements must be made through a Local Office of the Ministry of Labour or a Scheduled Employment Agency if the applicant is a man aged 18-64 inclusive or a woman aged 18-59 inclusive unless he or she, or the employment, is excepted from the provisions of the Notification of Vacancies Order, 1952.

DRAUGHTSMAN required by Gloucester Railway Carriage & Wagon Company, Gloucester, preferably with Steel Car or Diesel Car experience. 5-day week. Pension Scheme in operation. Apply LOCAL MINISTRY OF LABOUR AND NATIONAL SERVICE.

CIVIL ENGINEERS (RAILWAY): District Engineer and Assistant District Engineer required for British Railway Company operating in Chile and Bolivia. Only candidates with railway experience should apply. Applications in writing with full particulars, qualifications, training and experience to—BOX 5720 c/o Charles Barker & Sons Ltd., 31, Budge Row, London, E.C.4.

DRAUGHTSMAN required, preferably with experience of railway rolling stock design. Salary in accordance with previous experience and qualifications.—CRAVENS RAILWAY CARRIAGE & WAGON CO. LTD., Darnall, Sheffield, 9. Apply Employment Exchange.

A LEADING Mutual Life Assurance Office requires a number of young men for training as Inspectors. Exceptional opportunities for advancement to those possessing a sound education and good personality, and who are prepared to work hard and prove their ability. Write stating age to Box 419, *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

RECONDITIONED Loco Steam Cranes for Immediate Delivery, 5-ton Grafton Loco Steam Crane having steel jib 30 ft. 6 in. long; cast iron carriage with bevel travelling gear; 4 ft. 8½ in. gauge; 7 ft. wheelbase; all motions by steam; horizontal cylinders about 7 in. dia. × 10 in. stroke, vertical boiler approx. 8 ft. × 4 ft. for 80-lb. W.P. Constructed to lift 5-tons at 15 ft. with return block and 1 ton 16 cwt. at 29 ft. on single rope. 3-ton Smith Loco Steam Crane, having 30 ft. swan neck steel jib; steel carriage with spur travelling gear; 4-ft. 8½-in. gauge; all motions by steam; vertical cylinders 7 in. dia. × 10 in. stroke; vertical boiler, lagged 7 ft. 4 in. × 3 ft. 3 in. for 100-lb. W.P. Constructed to lift 3 tons at 14 ft. radius, 2 tons at 18 ft. radius, 1½ tons at 20 ft. radius. The design of the jib lends itself ideally for lifting bulky loads to a maximum height. 3-ton Smith Loco Steam Crane; 30 ft. steel jib; cast iron carriage; 4-ft. 8½-in. gauge; 6-ft. wheelbase; all motions by steam; vertical cylinders about 7 in. dia. × 10 in. stroke; vertical boiler for 100-lb. W.P. 3-ton Butler Loco Steam Crane having 25 ft. 6 in. steel jib; cast iron carriage; 4-ft. 8½-in. gauge; 6-ft. 6-in. wheelbase; all motions by steam vertical cylinders 7 in. dia. × 10 in. stroke; vertical boiler 8 ft × 4 ft. for 100-lb. W.P. constructed to lift 3-tons at 15 ft. radius. 3-ton Butler Loco Steam Crane; 30-ft. steel jib; cast iron carriage; 4-ft. 8½-in. gauge; 6-ft. 6-in. wheelbase; all motions by steam; vertical cylinders 7 in. dia. × 10 in. stroke; fitted with new vertical boiler 8 ft. × 4 ft. for 100-lb. W.P. To lift 3-tons at 15 ft. radius. 2-ton Taylor & Hubbard Loco Steam Crane; 35-ft. 6-in. steel jib; steel carriage; 4-ft. 8½-in. gauge; 6-ft. wheelbase; all motions by steam; horizontal cylinders 7 in. dia. × 10 in. stroke, vertical boiler for 80-lb. W.P. Constructed to lift 2-tons at 19 ft. 6 in. radius. The above cranes have been thoroughly reconditioned and are offered with every confidence. They have been overload tested in accordance with the Factory Act and will be supplied with all relevant Test Certificates. Inspection at our Titan Works, Grays, Essex by prior appointment with Contractors' Plant Department.—THOS. W. WARD, LTD., (Contractors' Plant Department), Brettenham House, Lancaster Place, Strand, London, W.C.2. 'Phone: Temple Bar 1515. 'Grams: Toward, Telex.

RUNNING Superintendent for the Southern Railway of Peru, must have served apprenticeship railway workshop and ten years' experience as an administrative and technical officer. Knowledge of Spanish desirable. Must be under 50 years of age. Apply Secretary, THE PERUVIAN CORPORATION LIMITED, 144, Leadenhall Street, London, E.C.3.

WORKS MANAGER for Locomotive Workshops, Southern Railway of Peru required. Must be a Mechanical Engineer with practical locomotive workshop experience. Preferably 35/40 years of age and with a knowledge of the Spanish language. Apply to the Secretary, PERUVIAN CORPORATION LIMITED, 144, Leadenhall Street, London, E.C.3.

LOCOMOTIVE, CARRIAGE and WAGON SENIOR DRAUGHTSMAN 30/35 years of age. Qualifications: Must have served a full general apprenticeship in an Engineering workshop (preferably Railway) and have had at least five years' drawing office experience with some time in an executive capacity. A knowledge of Spanish an advantage. Future prospects. Apply to the Secretary, PERUVIAN CORPORATION LIMITED, 144, Leadenhall Street, London, E.C.3.

JUST PUBLISHED.—Twenty-Five Years of the North Eastern Railway, 1898-1922. By R. Bell, C.B.E., Assistant General Manager, N.E.R. and L.N.E.R. Companies, 1922-1943. Full cloth. Cr. 8vo. 87 pages. 10s. 6d.—*The Railway Gazette*, 33, Tothill Street, London, S.W.1.

BOUND VOLUMES.—We can arrange for readers' copies to be bound in full cloth at a charge of 25*s*. per volume, post free. Send your copies to the SUBSCRIPTION DEPARTMENT, Tothill Press Limited, 33, Tothill Street, London, S.W.1.

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session on March 17, when Mr. A. W. Woodbridge, Signal & Telegraph Engineer, Western Region, presided. The final evening session will take place at 6.30 p.m. tomorrow, March 22, under the chairmanship of Mr. K. W. C. Grand, Chief Regional Officer, Western Region.

Model Railway Exhibition.—The Model Railway Club is holding its annual exhibition in the Central Hall, Westminster, from Tuesday, April 15, to Saturday, April 19. Except on April 15, when admission will be after 2 p.m., the exhibition will be open between 11 a.m. and 9 p.m. This year the number of models will exceed 3,000 and will include a comprehensive display of each of the former main-line companies; an innovation will be a garden model railway. The large working layout staged by British Railways will be on view in the lower hall.

Recommendation to Increase Road Haulage Rates.—The National Rates Committee of the Road Haulage Association, the national body representing free enterprise hauliers, at a meeting in London on March 13 recommended members to increase their rates for general haulage by 10 per cent. on April 1. This recommendation covers substantial additional costs in wages, fuel, maintenance and other items, including the Budget increase of 7½d. per gallon on the fuel tax. It is expected that where circumstances have compelled members to make any percentage increase in their rates since May, 1951, they will now apply only such further addition as will bring the total to 10 per cent.

B.T.H. Exhibits at the Physical Society's Exhibition.—Exhibits by the British Thomson-Houston Co. Ltd., at the Physical Society's Exhibition of Scientific Instruments and Apparatus at the Imperial College, London, from April 3 to 8, will include a demonstration of waterproof insulation for electric motors. A ¼ h.p. squirrel-cage motor will be shown running under water, the stator having been insulated with a modified polyester resin. This type of insulation has been designed in particular for stator units to be used in machine tools. Other exhibits will show recent improvements in the use of germanium as a semi-conductor. Fluorescent lamps incorporating new phosphors which produce ultra-violet light will be shown.

Peterborough Railway Discussion Group.—During the winter a railway discussion group has been meeting weekly in Peterborough under the auspices of the Railway Executive and the Peterborough Joint Education Board. The chair has been taken by Mr. Eyre, of the Peterborough Technical College, and under his guidance some 50 railwaymen of all grades have discussed many aspects of railway working. Railway Officers with expert knowledge of particular subjects have been invited each week to visit the group and to open the discussion.

Conference on Human Relations in Industry.—The Minister of Labour & National Service, Sir Walter Monckton, on March 18 opened the Conference on Human Relations in Industry held in London on March 18-20. The delegates represented the British Employers' Confederation, the nationalised industries, the T.U.C., the British Institute of Management, the Industrial Welfare Society, and the British Association for Commercial & Industrial Education, also representatives of the universities. Sir Cuthbert Clegg, President of the British Employers' Confederation, and Mr. T. Williamson, General Secretary of the National Union of General & Municipal Workers, spoke on some conclusions on human relations in industry drawn from the reports of the Anglo-American Productivity Teams, and Sir George Schuster presented a paper on projects sponsored by the Human Factors Panel set up by the Committee on Industrial Productivity. Other speakers included Mr. John Marsh, Director of the Industrial Welfare Society, on factors affecting the opportunity to work; Mr. Lincoln Evans, General Secretary of the Iron & Steel Trades Confederation, on factors affecting the capacity of workers, including selection and training; and Sir Greville Maginness, Past President of the British Employers' Confederation, on factors affecting the will to work, including joint consultation and incentives.

L.C.C. Representations on Fare Increases.—At a meeting of the London County Council on March 18, it was decided to make immediate representations and to submit evidence in writing to the Transport Consultative Committee on the recent increases in passenger fares in the London area. The Minister of Transport is to be asked to set up a Select Committee to examine the Transport Act of 1947 and to hold in abeyance the new charges until the Select Committee reports.

Liverpool-Belfast Sailing Tickets.—The Belfast Steamship Company draws attention to the necessity for sailing tickets between Liverpool and Belfast. Sailing tickets will be required from Belfast for sailings on every Friday, July 4 to August 15 inclusive, and on Saturdays, July 12, and August 2, 9 and 16. In the opposite direction sailing tickets will be required from Liverpool for one day, April 10, then on Thursday and Friday, July 24 and 25, Friday, August 1, and Saturdays, July 19 and 26, and August 2 and 23.

Diesel Generators and Pumps.—New generating sets will be shown for the first time on the stand of Auto-Diesels Limited, of Uxbridge, at the Castle Bromwich section of the British Industries Fair. These will include a 1-kW. totally enclosed unit, as supplied for fitting to excavators to provide power for floodlighting; and a 500-watt, 230-volt a.c. portable equipment of extremely compact design. Of particular interest in the range of pumping sets will

be two new models at each end of the scale of capacities. The new model "B1" pump is a petrol engine-driven self-priming equipment, ¾ in. suction and discharge, capable of pumping up to 1,000 gal. per hr., but weighing only 23 lb. The new model "ADP6DA" equipment is a 6-in. pump powered by an air-cooled diesel engine and, while being extremely compact and mobile, is capable of discharges up to 60,000 gal. per hr. This unit will be of particular interest to civil engineering contractors and engineers engaged in large-scale dewatering or irrigation schemes.

Visit to S.M.J. Line.—A visit to the L.M.R. Blisworth—Stratford-on-Avon line (formerly Stratford-on-Avon & Midland Junction Railway) has been arranged by the recently formed Railway Development Association for April 5, the date on which the passenger service will be withdrawn (see our March 14 issue). The party will leave Euston at 9.5 a.m. and return from Stratford on the last passenger train of the public service. It is hoped, also, to traverse the Stratford-Broom Junction section, already closed to passenger traffic, by special train. Anyone interested in going on this visit is invited to communicate with the organiser, Mr. John W. Smith, 246, Kew Road, Richmond, Surrey (Tel.: Richmond 0313).

Forthcoming Meetings

March 21 (*Fri.*).—Institute of Transport. Annual Dinner, at the Connaught Rooms, Great Queen Street, W.C.2, at 7 for 7.30 p.m.

March 22 (*Sat.*).—Permanent Way Institution, Manchester & Liverpool Section. Visit to Mines' Rescue Station at Boothstown, near Manchester, National Coal Board.

March 24 (*Mon.*).—Institute of Transport, at the Jarvis Hall (R.I.B.A.), 66, Portland Place, W.1, at 5.45 p.m. "Design in Transport," by Mr Gordon Russell, Director, and Mr. George Williams, Industrial Officer (Transport), Council of Industrial Design.

March 24 (*Mon.*).—British Railways, Southern Region, Lecture & Debating Society. Visit to the *News Chronicle* at 9 p.m.

March 25 (*Tue.*).—British Railways, Southern Region, Lecture & Debating Society. Visit to the *News Chronicle* at 9 p.m.

March 26 (*Wed.*).—British Railways, Southern Region, Lecture & Debating Society, at the Chapter House, St. Thomas' Sreet, S.E.1, at 5.45 p.m. Reading of Prize Winning Essays, and Annual General Meeting.

March 27 (*Thu.*).—Institution of Civil Engineers, Great George Street, S.W.1, at 5.30 p.m. "Recent Developments in Railway Curve Design," by Mr. J. C. Loach and Mr. M. G. Maycock.

March 28 (*Fri.*).—Institute of Welding, South London Branch. Annual Dinner, in the ballroom of the Charing Cross Hotel, at 7 for 7.30 p.m.

March 28 (*Fri.*) and 29 (*Sat.*).—Association of Supervising Electrical Engineers, Central Regional Council. Electrical Engineers Exhibition, at the Royal Horticultural New Hall, Greycoat Street, S.W.1, between 10 a.m. and 7 p.m.

March 28 (*Fri.*).—Institution of Mechanical Engineers, Storey's Gate, S.W.1, at 5.30 p.m. Annual General Meeting for corporate and non-corporate Members only.

Railway Stock Market

After the reaction in values which followed the Budget and the rising of the Bank rate from 2½ per cent. to 4 per cent., conditions in stock markets became steadier, and a moderate rally in British Funds helped sentiment generally. The better tendency reflected the assumption that although the 4 per cent. Bank rate came as a surprise, there is very little likelihood of a further increase, and that markets are likely to have a period in which to settle down. E.P.L. will bear heavily on increased profits, but will not mean that industrial shares will become in effect fixed-interest securities, as was the case when Sir Stafford Cripps first introduced dividend limitation.

Despite E.P.L., some companies which have paid conservative dividends for a period of years will be able in future to pay more to shareholders if they wish, assuming that profits do not decline. On the other hand, because of rising costs, more difficult conditions in export business, and growing competition at home, many will be unable to keep earnings at the levels reached on 1951, and lower dividends seem inevitable from a fairly wide range of companies. This possibility already seems to have been fairly fully discounted in share prices. Until the Finance Bill has been debated in Parliament it will be difficult to estimate the position of some companies in regard to E.P.L.

There has been no expansion of activity, despite the Budget, in overseas securities unaffected by E.P.L., and foreign rails attracted only moderate attention. Leopoldina ordinary and preference stocks remained firm at 11¼ and 28½ respectively in view of the belief that total pay-outs on these stocks will exceed current market prices. Leopoldina Terminal debentures were around 18¼ with the ordinary units firmer at slightly under 11½d.

United of Havana stocks strengthened after news of the meeting between the new Cuban Prime Minister and the sugar mill owners regarding purchase of the railway. The 5 per cent. (1906) debentures changed hands up to 18¼ and the 4½ per cent. Cuban Central Debentures around 39.

Paraguay Central 6 per cent. debentures have marked 24 and Costa Rica 6½ per cent. second debentures 23. Chilian Northern 5 per cent. debentures changed hands around 36½, and International of Central America 5 per cent. bonds were dealt in around 124½. Manila issues reflected profit-taking after their recent improvement; the "A" debentures were 67 and the preference shares 7s. 4½d.

Mexican Central "A" debentures eased to 81½. After their recent recession, Antofagasta stocks had a steadier appearance with the ordinary at 15¾ and the preference 65½.

Canadian Pacific strengthened with other dollar stocks, and were $67 with the 4 per cent. preference steady at £61, and the 4 per cent. debentures £76.

Road transport shares have been steadier with Southdown at 80s., West Riding 33s., while Lancashire Transport rallied to 46s. 3d. and Maidstone & District were 59s. B.E.T. deferred stock came back to £355, after the earlier downtrend after the Budget. engineering shares steadied, but were generally lower on balance, though it is recognised that despite E.P.L., there are good prospects of dividends being maintained. The new tax seems likely to prevent most engineering companies from increasing dividends. Guest Keen have come back to 47s. 6d. at the time of going to press, Babcock & Wilcox to 64s. 6d. and John Brown to 43s. 3d. Neepsend were 22s., Ransome & Marles 21s., and Ruston & Hornsby 31s. 9d., while elewhere, Tube Investments changed hands as slightly under £5. T. W. Ward were 70s. xd. Although the market is confidently expecting the forthcoming dividends to be maintained, Vickers have receded with the general trend to 44s. 3d., and Cammell Laird 5s. shares to 10s. 10½d.

Among shares of locomotive builders and engineers, Beyer Peacock came back to 30s., Hurst Nelson to 48s. 6d., while North British Locomotive were 16s. and Birmingham Carriage 32s. 6d. Vulcan Foundry were 22s. 3d., Wagon Repairs 5s. shares 10s. 9d., Charles Roberts 21s. 9d., and Gloucester Wagon 12s. 3d.

NEW BRITISH INSULATED CALLENDER'S ORDINARY SHARES.—British Insulated Callender's Cables Limited has decided to issue 3,109,614 of the five million additional ordinary £1 shares, powers to create which were taken in January. The price will be 22s. per share, and they will be offered to the ordinary stockholders on the register on February 29 in the proportion of one new share of £1 for each £3 of stock held, fractions of new shares being disregarded.

Traffic Table of Overseas and Foreign Railways

	Railway	Miles open	Week ended	Traffics for week: Total this year	Traffics for week: Inc. or dec. compared with 1949/50	No. of week	Aggregate traffics to date: Total 1950/51	Aggregate traffics to date: Increase or decrease
				£	£		£	£
South & Can. America	Antofagasta ...	811	7.3.52	178,670	+ 79,330	10	1,411,650	+ 556,760
	Costa Rica ...	281	Jan., 1952	c1,495,633	+ c340,108	31	c8,756,306	+ c1,420,052
	Dorada	70	Jan., 1952	34,370	— 7,187	4	34,370	— 7,187
	Inter. Ctl. Amer....	794	Jan., 1952	$1,315,737	+ $393	4	$1,315,737	+ $393
	Paraguay Cent. ...	274	28.12.51	G289,547	+ G102,688	26	G8.823.911	+ G3.556,978
	Peru Corp. ...	1,050	Feb., 1952	$7,931,000	+ $1,312,000	35	$65,979,000	+ $5,211,000
	" (Bolivian Section)	66	Feb., 1952	Bs.15,175,000	+ Bs.3,319,000	35	Bs.126,266,000	+ Bs.30,009,000
	Salvador	100	Nov., 1951	c140,000	— c28,000	22	c635,000	+ c112,000
	Taltal	147	Feb., 1952	$2,531,000	+ $797,000	35	$17,457,000	+ $4,860,000
Canada	Canadian National†	23,473	Jan., 1952	17,157,000	+ 1,521,000	4	17,157,000	+ 1,521,000
	Canadian Pacific† ...	17,037	Jan., 1952	11,534,000	+ 618,000	4	11,534,000	+ 618,000
Various	Barsi Light* ...	167	Feb., 1952	36,960	+ 3,945	48	369,540	+ 50,557
	Gold Coast ...	536	Dec., 1951	378,543	+ 72,605	39	2,473,919	+ 208,373
	Mid. of W.Australia	277	Dec., 1951	52,821	+ 10,980	26	357,578	+ 122,355
	South Africa ...	13,398	23.2.52	1,950.261	+ 168,491	47	89,744,472	+ 8,604,427
	Victoria	4,744	Nov., 1951	2,143,056	+ 1,149,080‡	22	—	—

* Receipts are calculated at 1s. 6d. to the rupee † Calculated at $3 to £1
‡ No comparison with November, 1950, when, due to a strike, services did not operate